THE PRODUCTION AND MANAGEMENT JOURNAL OF THE NORTH AMERICAN PULP AND PAPER INDUSTRY

PULP & PAPER

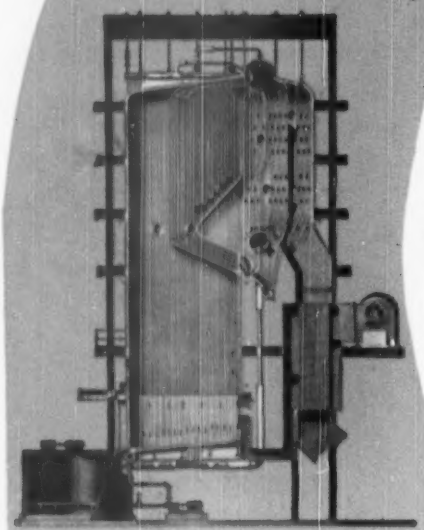
JUNE 1950
Vol. 24 No. 7

CALIFORNIA'S FIRST MODERN WOOD PULP AND BOARD MILL

New San Joaquin Division, Fibreboard Products Inc., on San Joaquin River. Note outdoor chip storage at right. Extensive complete story in this issue.

SELECTED FOR PALATKA

.....another B&W Recovery Unit



Typical B&W Two-Drum Black Liquor Recovery Unit.

For its sulphate mill at Palatka, Florida (shown above) the Hudson Pulp & Paper Co. recently ordered a 250-ton B&W Recovery Unit. An existing 160-ton B&W Unit has been in service since Nov. 1947 at this mill. This repeat order for a larger unit of the same design tells its own story.

The new unit will handle 1,500,000 lb. of black liquor daily, and will generate 112,900 lb. of steam per hr. at 450 psi and 725 F.

Repeat orders are an old story with B&W Recovery Units. High chemical and heat-recovery, high availability, low-cost operation, and maintenance simplicity due to elimination of hand lancing, account for their industry-wide preference.

BABCOCK & WILCOX

P-51

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New Camachines have the right answer to your roll production problem. Whether it's a two-ton roll of newsprint or a half-ounce roll of plastic tape you give your customers better quality with *Camachine*-made rolls.

Camachines are designed and built by specialists in roll production equipment. No matter what material you handle you will be amazed by the performance of the new *Camachines*. Long rolls or thin rolls? Heavy or light? Paper, plastic, rubber or textile? Coated materials, tacky materials or materials of uneven caliper? When it comes to presenting your customers with better rolls of any size, any material, *Camachines* will help you to . . .

The Camachine Commander—a fast, heavy-duty slitter-rewinder for plain, waxed, gummed and coated paper or paper board. Speeds up to 2000 fpm. Rewound rolls up to 40" dia. Write for free copy of Bulletin 2000.

give them what they want!

Cameron Machine Company • 61 Poplar Street • Brooklyn 2, N. Y.

Camachine engineers will be pleased to consult with you on any roll production problem.

AA-908

PACIFIC COAST SUPPLY COMPANY • PUBLIC SERVICE BUILDING, PORTLAND 4, ORE. • 260 CALIFORNIA ST., SAN FRANCISCO 19, CAL.

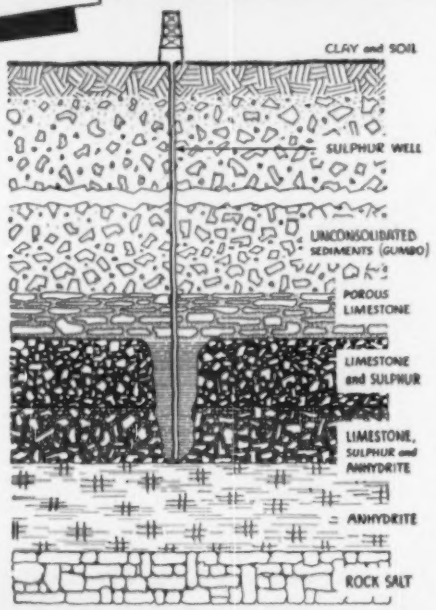
SULPHUR

*Interesting Facts Concerning This Basic Raw Material from the Gulf Coast Region

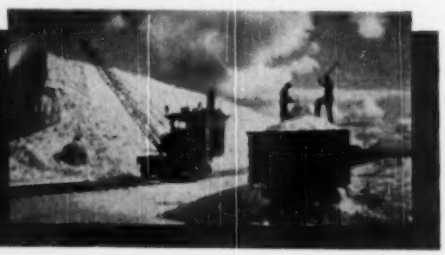
*DEPOSITS . . .

Practically all of the elemental sulphur used in this country comes from mines in Louisiana and Texas.

There, the sulphur deposits occur in the cap rock overlying certain salt domes. The sulphur is mined at depths of 300 to 2,000 feet below the surface. It is melted in place by pumping into the deposit water heated under pressure to a temperature above the melting point of sulphur. The melted sulphur flows away from the limestone and is pumped to the surface where it is allowed to solidify in vats. By such means sulphur nearly 100% pure is produced.



Loading operations at one of the huge vats of Sulphur at our Newgulf, Texas mine. Such mountains of Sulphur are constantly being built at our mines, from which shipments are continually made.

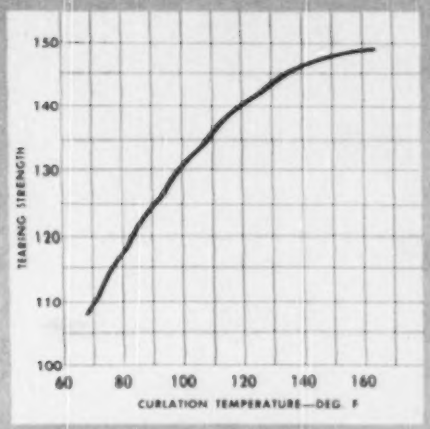


TEXAS GULF SULPHUR CO. INC.

75 East 45th St. New York 17, N. Y.

Mines: Newgulf and Moss Bluff, Texas

TEAR CURVE



TEST DATA

TEMPERATURE OF CURLATION °F	RAW*	70	120	160
FREENESS	835	835	845	856
MULLEN	70.8	62.1	52.6	37.8
TEAR	95	109	140	149
DENSOMETER	14.0	3.7	1.2	0.7

*WITHOUT CURLATION

NOTE: Description of the testing procedures employed by The Curlator Corporation laboratory will be provided upon request.

The CURLATOR® is a tool for altering the properties of pulp and paper to obtain qualities hitherto unachievable by mechanical means. The effects of CURLATION are controllable over a wide range by conditions of treatment. They vary with the raw material and may be described only in relation to a particular pulp.

Effect of Temperature During Curlation Using Power Consumption of 2.5 H.P. Days Per A.D. Ton on the Properties of

PREVIOUSLY UNDRIED NORTHERN UNBLEACHED SULPHITE PULP

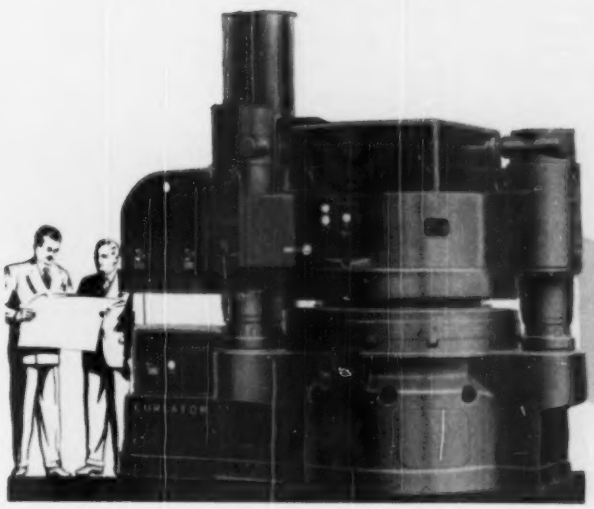
MAY CURLATION SOLVE YOUR PROBLEM?

CURLATION is a fully tested and thoroughly proved mechanical process. It not only produces a permanent change in the shape of pulp fibres, but also exerts a powerful de-shiving action, with negligible change in freeness.

The effects obtainable with CURLATION vary widely with the raw material and the conditions of treatment. In general, CURLATION tends to produce an easier beating pulp from which water is more easily removed.

Sheets of CURLATED pulp exhibit a more even textured matte appearance. In addition, the range of qualities obtainable from a given pulp is broadened.

Other important advantages exist. Your inquiries are invited.



CURLATOR®
Corporation
565 BLOSSOM ROAD · ROCHESTER 10, NEW YORK

®T. M. Reg.—Curlator Corporation, Rochester, N. Y.

ANSWER TO A SPECIFIC NEED NOW IN THE CRANE LINE

NEW, LOW-COST FLUID-MOTOR OPERATED GATE VALVES

Crane 8-Inch No. 465½ Fluid-Motor Operated 125-Pound Iron Body Gate Valve.

These valves fill the need for a power-actuated pipe line control at lower than usual cost. By utilizing a simplified fluid motor, they permit wider application of mechanically-operated valves to increase plant efficiency.

Low in first cost . . . low in operating cost . . . Crane Fluid-Motor Operated Valves save labor, help prevent accidents and offer definite advantages when installed on hard-to-reach valves or on valves used in timed operating cycles.

OPERATE AT LOW COST—Crane Fluid-Motor Operated Gates utilize pressure sources readily available in most plants—compressed air, water or oil . . . at pressures ranging from 40 to 300 psi.

HIGH STARTING TORQUE—Motor is reversing type and is designed to exert greater torque when unseating the valve than when seating it. Added power to open valve against sticking is assured.

NO WASTE OF POWER . . . NO LOSS OF FLUID—Pressure-tight motor stalls when disc is in fully open or closed position. Motor can remain stalled indefinitely . . . under full pressure . . . with no leakage of operating fluid. No power is wasted in maintaining fluid at proper operating pressure.

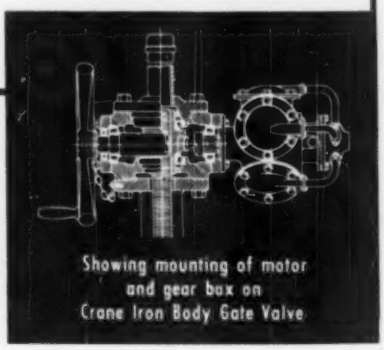
Crane Fluid-Motor Operated Valves are now available in the following pressure classes, types and sizes:

25-pound wedge disc gate	12-in. to 30-in.
125-pound wedge disc gate	5-in. to 20-in.
25-pound double disc gate	10-in. to 30-in.
100-pound W.O.G. double disc gate	6-in. to 24-in.
A.W.W.A. double disc gate	4-in. to 20-in.
Pulp Stock Valves	8-in. to 20-in.

Send for this descriptive folder—See how Crane Fluid-Motor Operated Gate Valves can help increase the operating efficiency of *your* plant. Ask your Crane Representative for your copy, or WRITE FOR FOLDER AD-1803. No obligation.

How Crane Fluid-Motor Works

Radial-type motor has five diaphragm sealed chambers. Operating fluid, admitted through a 4-way distributing valve, acts against diaphragms to exert force against pistons. The pistons, in turn, transmit the thrust to an eccentric which causes drive shaft to rotate. Hammerblow device in gearbox allows motor to attain speed before loading and provides impact to overcome friction of valve parts.



Showing mounting of motor and gear box on Crane Iron Body Gate Valve

CRANE CO., 836 S. Michigan Ave., Chicago 5, Ill.
Branches and Wholesalers Serving All Industrial Areas

EVERYTHING FOR EVERY PIPING SYSTEM

CRANE

VALVES • FITTINGS • PIPE • PLUMBING AND HEATING

The Rice Barton

DynoPulper

—completes treatment of paper stock in one machine

Other DynoMachines:

- The **QuatroPulper** is designed for processing stock in large capacities . . . either batch or continuous operation.
- The **DynoChest** is primarily for disintegrating stock in slush form . . . batch operation.
- The **Dynofiner** is for performing the same operation on a continuous basis.

The DynoPulper is a highly efficient machine for processing any type of pulp or waste paper . . . completing the stock treatment in one operation.

The DynoPulper employs two opposed DynoPellers (described below) which rapidly and economically reduce the stock to slush form . . . then continue the operation to completely separate the individual fibres one from the other. There is no appreciable drop in freeness and no cutting or shortening the original fibre.

The fibre characteristics of the stock can be developed further by giving it additional time in the DynoPulper . . . eliminating the need for beating on many grades of paper.

The DynoPeller

is the heart of all DynoMachines. Its concave face is lined with rough, hard carbide particles. As the DynoPeller rotates it causes a suction at its center that pulls the stock towards it. Centrifugal force then causes the stock to flow rapidly over the rough carbide particles. This effective dynomizing action completely disintegrates the stock . . . separating each fibre from its neighbor while maintaining its original length.

Write for complete information.

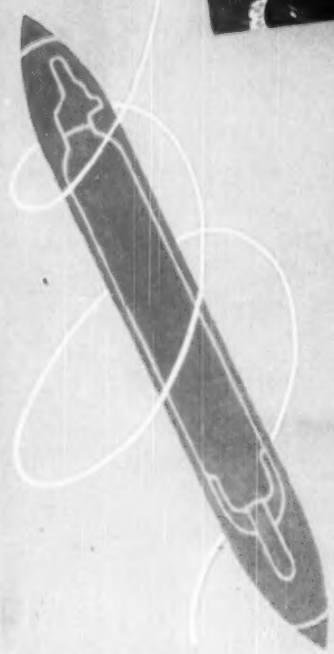
RICE BARTON *Research Corporation*

WORCESTER 1, MASS.

TENAX FELTS

give you efficiency and economy as they aid you in making the finest possible paper

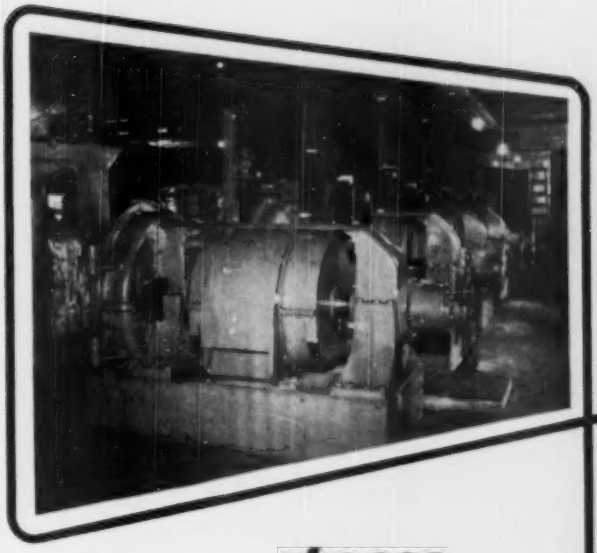
SPINNING THE YARN FOR A TENAX FELT IS DONE WITH PRACTISED CARE AND SKILL



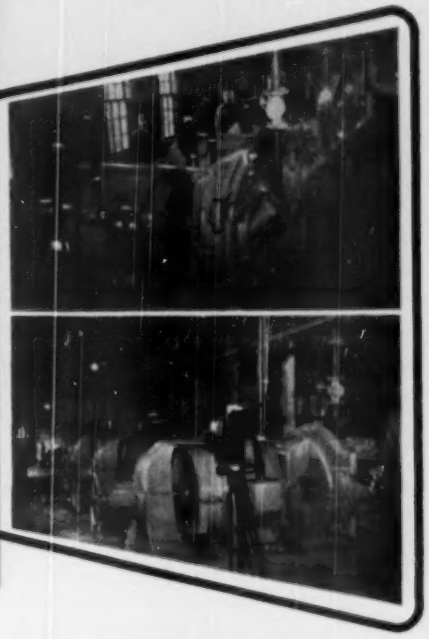
With the speed and efficiency of modern machinery, numerous intricate processes are applied at the Lockport Mill as carefully and meticulously as by the old-time guild workers. As a result you are rewarded with a more profitable operation with Tenax Felts.

The Lockport representative in your territory is fully qualified to advise on all technical questions relating to felts. He is at your service as is our plant and all its people. We invite your inquiries.

LOCKPORT FELT COMPANY—NEWFANE, NEW YORK



Mills that compare Refiners

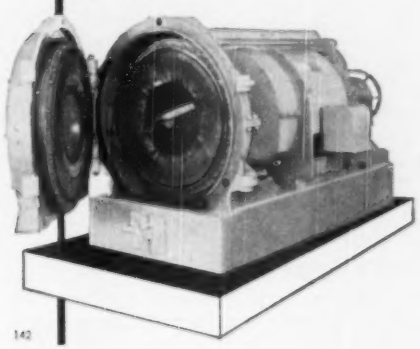


choose Sprout-Waldron

THE OTSEGO FALLS INSTALLATION

Photographs showing a battery of S/W Refiners installed at the Otsego Falls Paper Mills, Inc. Otsego, Mich.

S/W Refiners do a wide variety of jobs—all of them thoroughly and economically. Here are some applications: refining kraft, soda, and sulphite knotter and fine screen rejects; hogged bull screen rejects; knotter and second screen rejects of raw groundwood; semi-chemical chips of all kinds; spent chips after extraction process; bagasse, straw, and similar grasses; breaking down lumps in reclaimed waste paper stock; reduction and refining of rag and other half stocks, etc., etc.



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Sprout-Waldron Refiners do an excellent job in any kind of pulping, but in semichemical operations they far outperform similar equipment. They do more, do it better, and at less cost.

Their unique peripheral control ring feature provides great flexibility of adjustment which enables mills to produce a wide variety of pulp characteristics. With the Sprout-Waldron you can pinpoint exact pulp requirements. Rugged, long-wearing plates are available in many styles. They are easily changed, and are inexpensive.

These precision engineered Refiners involve a comparatively low initial investment. Additional savings are achieved through high production rates, economy in power consumption, ease of operation and maintenance.

A Sprout-Waldron representative will be glad to explain how these Refiners can increase your output and save on operating costs.

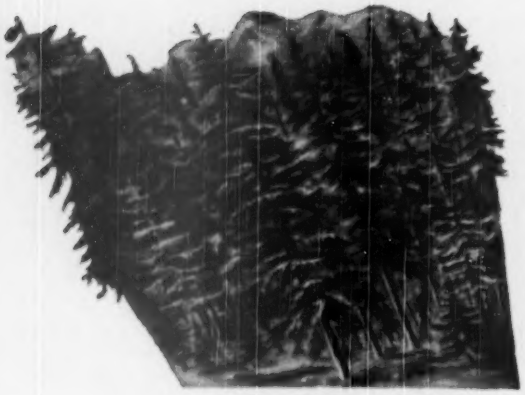
Write for Bulletin 41 which contains pertinent data on this equipment and how it can serve your needs. Sprout, Waldron & Co., Inc., 32 Waldron St., Muncy, Penna.

Sprout Waldron

Manufacturing Engineers

SINCE 1866

MUNCY • PENNSYLVANIA



WHAT IS PURIFIED WOOD CELLULOSE USED FOR?

Highly purified wood cellulose is one of the Country's most important chemical raw materials.

More than eighty per cent of all the viscose rayon and acetate yarns produced in this country are made from it. These yarns find their way into the daily living of everyone, in many types of wearing apparel for men, women, and children—and in a wide variety of other familiar articles.

The tire manufacturers use purified wood cellulose in increasingly large quantities in the form of high-strength viscose rayon cords and fabrics that lengthen the lives of automobile and truck tires.

Cellophane is made from purified wood cellulose, and so is another widely used transparent packaging material—cellulose acetate sheet and film.

Photographic film and paper—vulcanized fiber—lacquers—and many other related products also are made from this basic raw material.

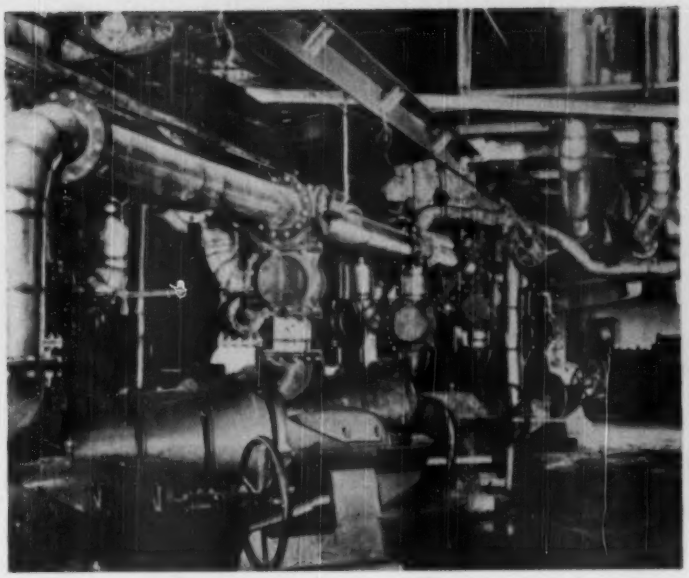
Supplying highly purified wood cellulose produced by chemical processes is Rayonier's job. A large part of the wood we use comes from our own forest properties, which are under management that keeps them continuously productive. Research by our scientists has resulted in a number of types of wood cellulose, each developed to give best results in making the end products for which it is used.

RAYONIER
INCORPORATED

EXECUTIVE OFFICES: 122 East 42nd Street, New York 17, New York • MILLS: Hoquiam, Port Angeles, Shelton, Washington; Fernandina, Florida

PRODUCER OF HIGHLY PURIFIED WOOD CELLULOSE for TEXTILES • TIRE CORD • CELLOPHANE • PLASTICS

A Monel stock line installation at the River Raisin Paper Company, Monroe, Mich. These fabricated Monel stock lines run from jordan engines to rear of solid Monel headbox on a board machine. Fabricated by BROWN-HUTCHINSON IRON WORKS, Detroit, Mich.



How do you keep YOUR STOCK LINES from Sliming?

Keeping slime and fibre accumulations from forming in stock lines can be expensive . . . but many leading mills have proved that it need not be.

The simple fact is—*stock lines and fittings* made of "35" Monel® will not promote fibre accumulations or slime.

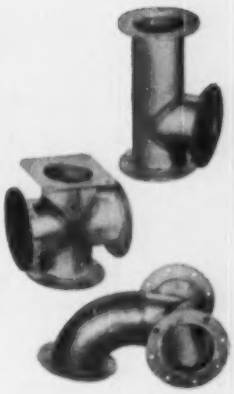
The secret of Monel's outstanding performance in stock lines is a twofold one. "35" Monel, in the experience of many mills, provides the most *wettable* surface of *any* commonly-used metal stockline material. And Monel retains this surface because it is 100% rustproof as well as highly resistant to paper-making chemicals.

Monel is readily workable . . . easy to form . . . easy to braze, weld, or solder . . . stays ductile without further heat-treatment.

Still other advantages . . . Monel stock lines are lighter in weight, easier to install and relocate with a minimum of labor. Monel's extra strength and stiffness permits using thin-walled sections that weigh much less than most conventional units.

In addition to stock lines, Monel has an excellent performance record in many other important paper-making applications . . . stock inlets, slice blades, head boxes, jordan fillings, doctor blades, screen plates, winding wire, pump shafts, valves, piping.

Take the first step towards lower maintenance costs in your plant by writing today for further information about money-saving Monel stock lines and fittings.

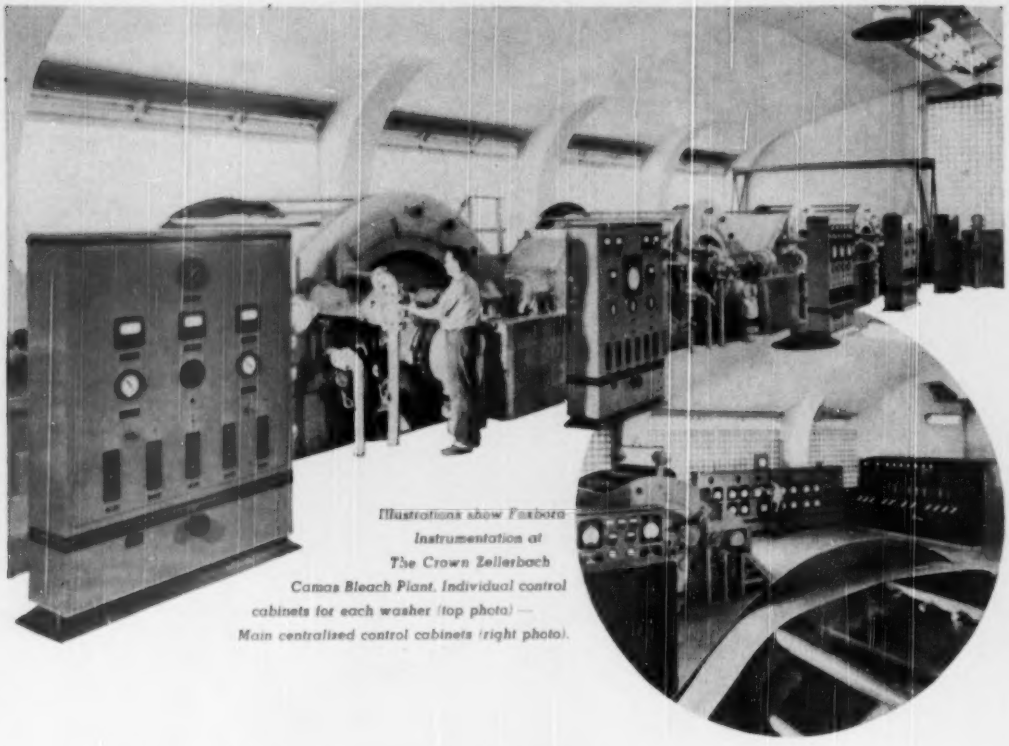


Fabricated Monel Elbows and Tees, used with Monel stock lines. Fabricated by BROWN-HUTCHINSON IRON WORKS, Detroit, Mich.

THE INTERNATIONAL NICKEL COMPANY, INC.
67 Wall Street, New York 5, N. Y.

EMBLEM OF SERVICE INCO

MONEL
...FOR MINIMUM MAINTENANCE



Illustrations show Foxboro Instrumentation at The Crown Zellerbach Camas Bleach Plant. Individual control cabinets for each washer (top photo) — Main centralized control cabinets (right photo).

Ultra-Modern Camas Bleach Plant Controlled with Foxboro Instrumentation

Crown Zellerbach's Camas Mill features an outstanding example of continuous pulp bleaching. Eight stages — seven chemical and one soak, controlled throughout with the aid of Foxboro Instrumentation, provide the high flexibility needed to produce from various wood species uniform quality bleached pulp and to a variety of color specifications.

Foxboro controls will make any bleach plant function better. They bring new flexibility to the process, faster production, higher quality, brighter and more uniform color, savings in chemicals, reduced operating costs and maintenance. For new bleach plants, they also make important reductions in piping costs possible.

Use Foxboro "know how", experience, and instruments of advanced engineering design to help you obtain maximum bleach plant efficiency. Whether you need a single instrument, or a complete integrated cabinet control system, talk it over with your Foxboro engineer or write **The Foxboro Company, 254 Neponset Avenue, Foxboro, Mass., U.S.A.**

FOXBORO
REG. U. S. PAT. OFF.

RECORDING · CONTROLLING · INDICATING
INSTRUMENTS

A REPUTATION IS A LIVING THING

GENERAL DYESTUFF CORPORATION · NEW YORK

When you get a "Big One"

The skillful fisherman doesn't depend on luck for getting the big ones. He has the proper equipment . . . knows how best to use it.

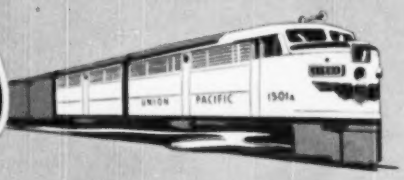
When Union Pacific gets a "big one" . . . a heavy tonnage freight shipment . . . it, too, has the equipment and the knowledge necessary for efficient handling.

For example, there are the "Big Boys" . . . largest, most powerful steam locomotives ever built. Designed to haul unusually heavy loads, they do a terrific job.

In addition, there's a large fleet of diesel-powered locomotives . . . more than 50,000 freight cars of various types.

Whether your shipment consists of heavy materials, fragile merchandise, perishables or what not, the U. P. can handle it efficiently and speedily.

UNION PACIFIC RAILROAD

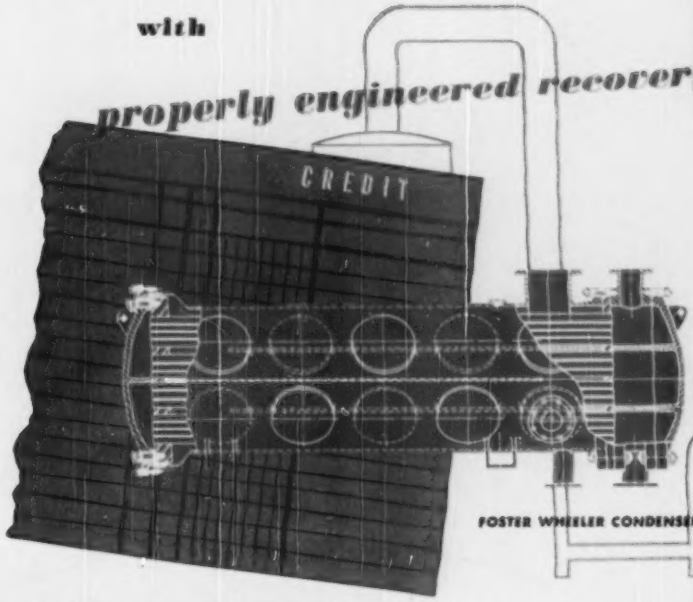


BE SPECIFIC: *Ship* UNION PACIFIC

adding a PROFIT

with

properly engineered recovery equipment



FOSTER WHEELER CONDENSER FOR TURPENTINE RECOVERY

TURPENTINE RECOVERY

Turpentine Recovery is proving a profitable "side" item at the completely modern Macon Kraft Mill near Macon, Georgia, the largest single-machine container-board mill in existence. Six hundred tons of container board are produced daily here for the Mead Corporation and the Inland Container Corporation.

Two to three gallons of turpentine per ton of pulp are recovered at the Macon Kraft Mill with Foster Wheeler equipment—a fine record for the type of pine available in the area. Other areas have shown even greater yields with Foster Wheeler Turpentine Recovery Systems which also recover heat in the form of hot mill water.

Other pulp mill equipment—designed, engineered, and constructed by Foster Wheeler—include Systems for Digester Blow Heat Recovery, Indirect Digester Heating, and Tall Oil Processing.

The Macon Kraft Mill near Macon, Georgia.

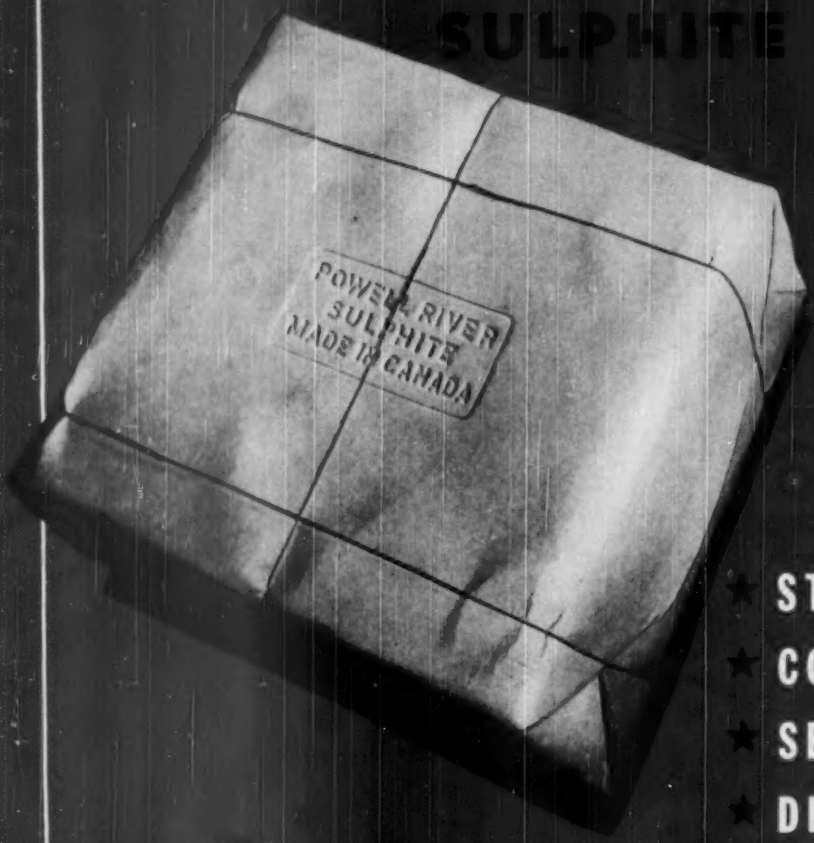
Write for bulletins 1D-47-13 and 1D-47-3

FOSTER WHEELER CORPORATION
165 Broadway, New York 6, N. Y.

FOSTER FW WHEELER

POWELL RIVER

UNBLEACHED SULPHITE PULP



★ STRENGTH
★ COLOR
★ SERVICE
★ DEPENDABLE SUPPLY

POWELL RIVER SALES COMPANY LIMITED

1208 STANDARD BUILDING · VANCOUVER, B. C.

For Peak Production use LINK-BELT SILENT CHAIN DRIVES

Easy to Select... Easy to Install... Immediate Delivery!

Full output at rated capacity demands power transmission without slippage—such as Link-Belt Silverstreak silent chain drives have always provided. Every r.p.m. is transmitted to the driven machine. Losses due to slippage are eliminated—output is increased. Yet Link-Belt Silverstreak silent chain possesses sufficient flexibility to absorb shock. Even on short centers it runs slack with minimum wear. Moisture, temperature, age or periods of idleness have no effect on these all-steel, precision-built drives, immediately available from stock in ½ to 50 h.p. sizes. Stock Drive book No. 2125-A speeds and simplifies the selection of chains and sprockets to provide the exact drive required for any application in this horsepower range. Send for a copy, at once.

LINK-BELT Silverstreak SILENT CHAIN DRIVES

4 New Features of LINK-BELT Pre-selected Stock Silent Chain Drives

1 TAPER-LOCK BUSHINGS
Easy on—easy off—no reboring necessary.

2 PINIONS-HARDENED TEETH
All-steel, with hardened teeth. Finished bores and keyways for N. E. M. A. motor shaft sizes.

3 INTERCHANGEABILITY
Link-Belt stock silent chain and Link-Belt stock silent chain sprockets are interchangeable with silent chain sprockets and silent chains cut to same tooth form.

4 EASY SELECTION
Easy-to-use selection tables cover ½ to 50 h.p. stock drives, tailored for normal operating conditions.

11.50E P

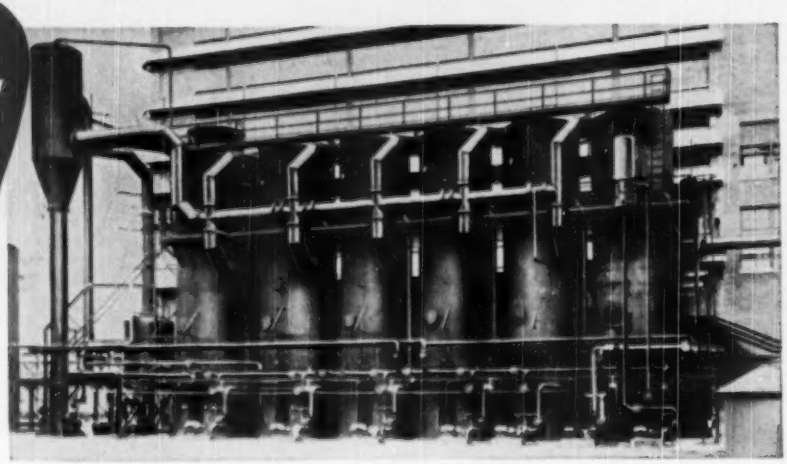
LINK-BELT COMPANY
PACIFIC DIVISION
Plants and Factory Branch Stores at San Francisco 24, Los Angeles 33, Seattle 4.
Offices and Factory Branch Stores at Portland 9, Spokane 13, Oakland 7.

See General American for

CREATIVE EVAPORATOR ENGINEERING

Installed outdoors or indoors . . . the new Conkey Integral Evaporator cuts overall evaporating costs

Designed to do your job best!



Conkey Integral Sextuple Effect Evaporator outdoor installation at southern pulp mill.

It's Self-Supporting—in more ways than one! Savings start the day the new Conkey Integral Evaporator comes into your plant. Unit is shipped fully assembled. A single up-ending operation sets it in place. As a result, you save on assembly, parts handling and erection costs. In addition, there are important savings in floor and building space—since no external centrifugal type separators, outside flash tanks and piping are needed. Where weather conditions permit, the entire unit may be installed outdoors—with no housing needed except for pumps and instruments.

Operating advantages of Conkey design are noteworthy. Because it reduces pressure drop losses between effects, it provides an increased working temperature drop across the heating element surface. This means a net positive gain in evaporation—extra evaporating capacity.

Long life—Integral construction eliminates many flanged joints, assuring both durability and tightness. For complete information that may be useful to your firm, write today.

Other General American Equipment:
Turbo-Mixers, Filters,
Thickeners, Dewaterers, Dryers,
Towers, Tanks, Bins,
Kilns, Pressure Vessels

OFFICES IN ALL PRINCIPAL CITIES

Process Equipment Division
GENERAL AMERICAN
Transportation Corporation
Sales Offices: 10 East 19th Street, New York 17, N. Y.
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Practical help to paper makers

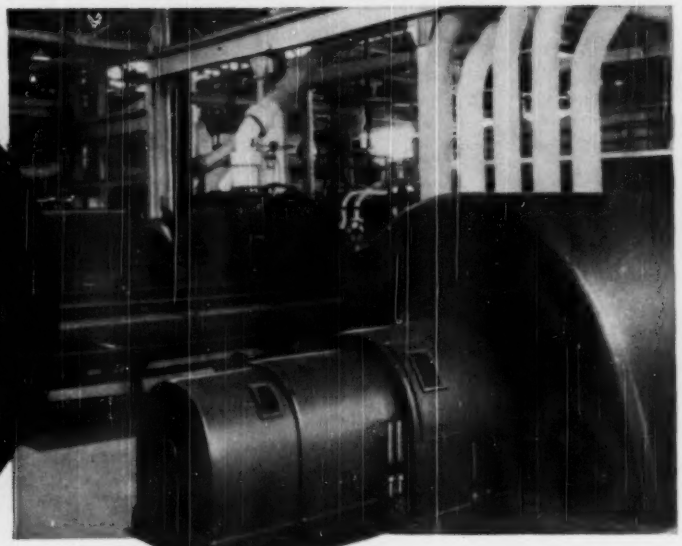
National Aniline Technical Service is always ready to supply the best color formulations and methods for dyeing all types of colored papers. Feel free to call upon our laboratories and technicians at any time.

For practical technical help and dependable delivery of quality dyes, write, wire or phone our nearest office.

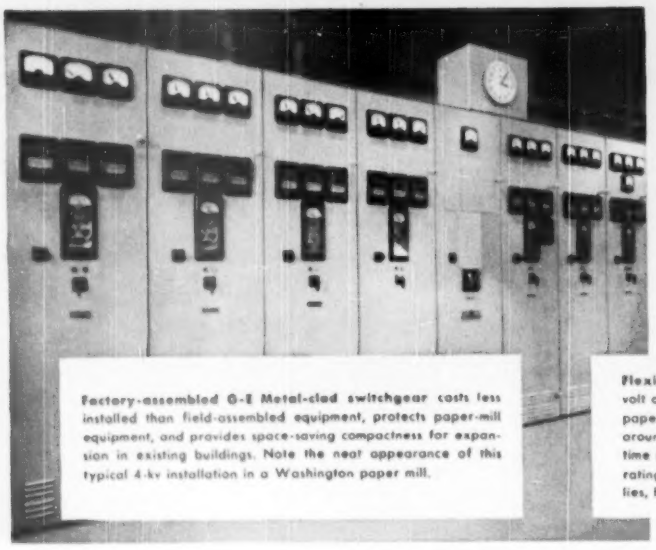
National Aniline PAPER DYES

NATIONAL ANILINE DIVISION

HERE'S EQUIPMENT RELIABILITY



For Continuous

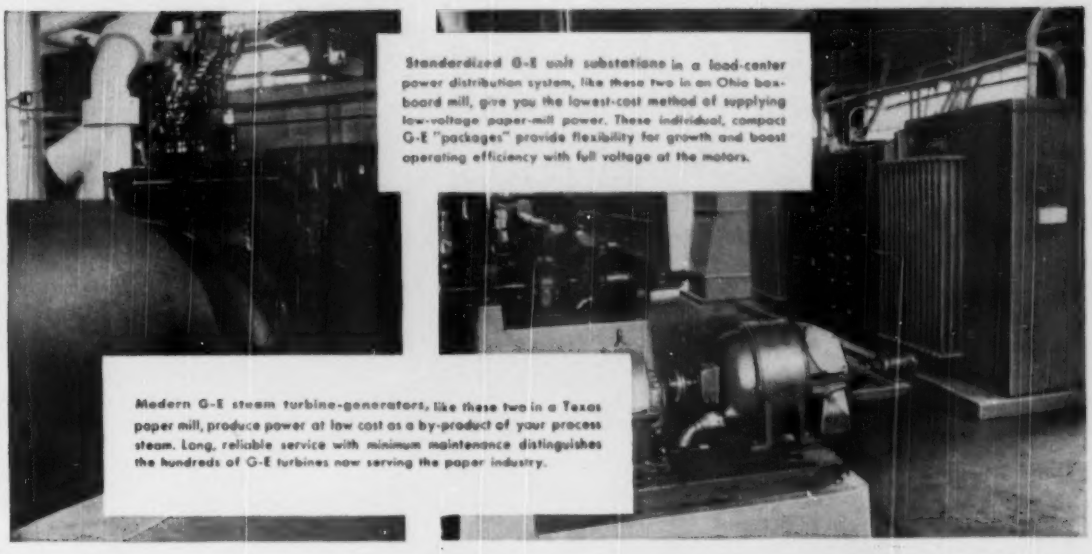


Factory-assembled G-E Metal-clad switchgear costs less installed than field-assembled equipment, protects paper-mill equipment, and provides space-saving compactness for expansion in existing buildings. Note the neat appearance of this typical 4-kv installation in a Washington paper mill.

Flexible G-E interlocked armor cable—for 600-volt overhead circuits in motor rooms and other dry paper-mill areas—needs no conduit, bends easily around obstructions, cuts installation and re-location time and costs. G.E. also makes cable in all voltage ratings, and in coverings to resist water, acids, alkalies, heat, etc.

GENERAL ELECTRIC

635-6



Standardized G-E unit substations in a load-center power distribution system, like these two in an Ohio box-board mill, give you the lowest-cost method of supplying low-voltage paper-mill power. These individual, compact G-E "packages" provide flexibility for growth and boost operating efficiency with full voltage at the motors.

Modern G-E steam turbine-generators, like these two in a Texas paper mill, produce power at low cost as a by-product of your process steam. Long, reliable service with minimum maintenance distinguishes the hundreds of G-E turbines now serving the paper industry.

Paper Production!

G-E power generation and distribution equipment —plus skilled application engineering assistance— gives you high service continuity, flexibility for expansion, lowest over-all cost!

As vital to continuous, high tonnage paper production as the efficient performance of your machines is the uninterrupted supply of power to drive them—provided by these dependable General Electric equipments.

Here are highly efficient turbines that generate power and furnish process steam at lowest over-all fuel cost—centralized Metal-clad switchgear that provides incoming-line and high-voltage feeder protection—and "building-block" load-center unit substations that cut power-system costs while permitting future expansion.

In addition, General Electric system-engineering takes advantage of every applicable technique . . . such as neutral grounding, simplified circuit arrangement, and combination of light and power circuits . . . to give you a better, lower-cost electrical system.

They all add up to power-system reliability—for continuous, profitable paper-making—when engineered to your individual needs by experienced G-E paper-mill specialists. For assistance in your mill modernization or expansion program, call in your G-E representative *early*. *Apparatus Dept., General Electric Company, Schenectady 5, N. Y.*

Co-ordinated Equipment FOR PAPER MILLS

Have you seen "Modern Industrial Power Distribution," a G-E "More Power to America" color sound slidefilm? Ask your nearest Power Supplier, or G-E office to arrange a showing for your organization.

FIBREpulper

BY DOWNINGTOWN

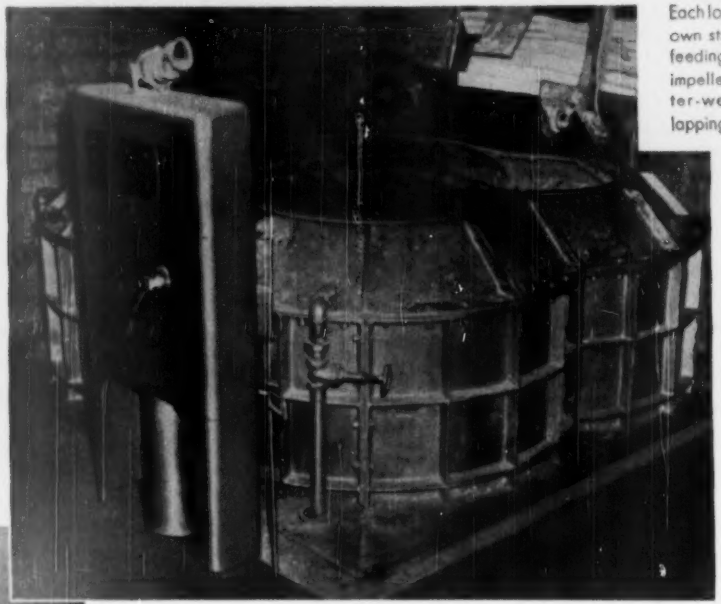
marks major pulping advance

IT'S THE SHAPE

FIBREpulper designed and custom-built for your operating conditions

Here's why

Each lobe develops its own stream of stock, feeding back to the impeller, with an inter-weaving, overlapping pattern.



Operating-floor view of FIBREpulper and auxiliary equipment in large eastern tissue mill.

Internal view of tub, showing rotor and extraction plates.

FIBREpulper being charged with baled pulp from conveyor.

Advantages: **Less horsepower per ton**

Shorter pulping period—less hydration—higher freeness

Shorter pulping period also means smaller unit for given tonnage

Easier to "floor plan"

More pulping for your money

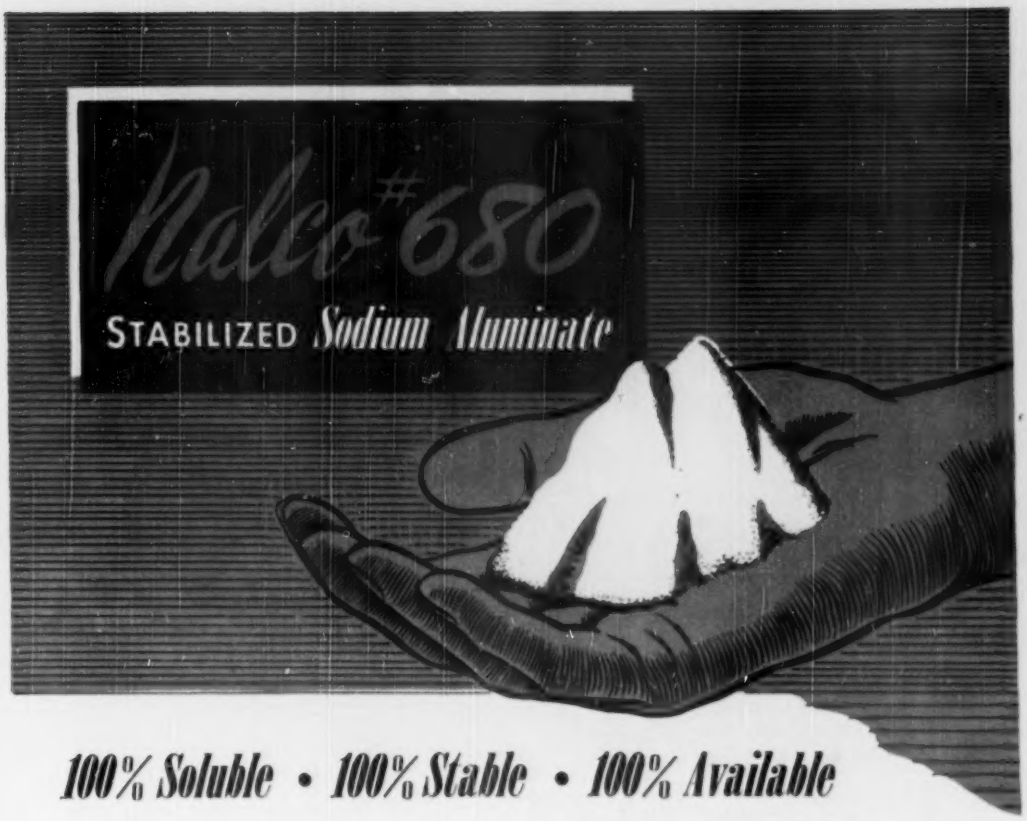
PATENTS APPLIED FOR

DOWNINGTOWN MANUFACTURING COMPANY

DOWNINGTOWN, PA.

Pacific Coast Representative: JOHN V. ROSLUND, Pacific Bldg., Portland 4, Ore.

DESIGNERS AND BUILDERS OF PAPER MAKING MACHINERY SINCE 1880



100% Soluble • 100% Stable • 100% Available

NALCO 680 is *completely* soluble, *completely* stable . . . the one sodium aluminate that remains in solution as sodium aluminate and does not settle out.

Every ounce of Nalco 680 provides active alkaline alumina . . . always available for rapid reaction. That means reduced alum requirements, lower acidity, better sizing, better retention, and therefore, better products.

Read the results reported at right — then ask a Nalco Representative to show you how Nalco 680 can repeat them in your mill.

BOX BOARD MILL — Power Savings

"Machine tenders report much better sheet formation with Nalco 680, and that jordans can be cut back 10 amps. Machines are cleaner with no deposits on cylinders."

KRAFT MILL — Alumina Retention

"Improvement in sizing, better retention of alumina, and general texture of the sheet using Nalco 680 are very marked. Converter reports the sheet handles better."

SULFITE BOND MILL — 45% Less Alum

"Results using Nalco 680 at the rate of 5 pounds per ton have been good. Improved sizing and reduced alum so that 140 pounds of alum is being added per 4500 pounds of furnish, instead of the previous 250 pounds of alum. This enabled the mill to meet rigid pH specifications for the paper."

TISSUE MILL — Clean Machines

"No. 6 paper machine remaining clean and generally good results through the use of Nalco 680 applied at the rate of four pounds per ton into the fan pump suction."

NATIONAL ALUMINATE CORPORATION

6213 W. 66th Place • Chicago 38, Illinois

Canadian inquiries should be addressed to Alchem Limited, Burlington, Ontario

THE Nalco SYSTEM ... Serving the Paper Industry through Practical Applied Science

Bingham PUMPS
...PRECISION BUILT...FIELD PROVEN

BINGHAM "Even-Flo" Pumps Will Not Become *Airbound*

Bingham "Even-Flo" Pumps discharge with an even non-pulsating flow regardless of variation in supply. An outstanding feature of the Bingham "Even-Flo" Pump is maintaining a constant liquid level at the suction no matter how varied the incoming supply may be.

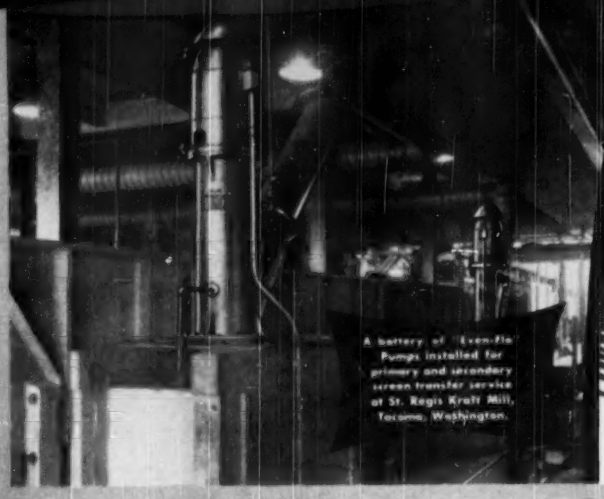
• • •

Bingham "Even-Flo" Pumps are being used effectively in the Pulp and Paper industry for such services as:

• Primary and Secondary Screen Transfer. • Seal Pits for Barometric Legs. • White Water and Stock Chests. • Mill Sewage and Waste Liquor Sumps. • Sludge Collecting Chests. • Acid Sumps.

• • •

All Bingham Pumps are precision built in our new and modern plant. All rotating parts are dynamically balanced. All parts requiring close tolerances are ground on heavy duty precision grinders. Each part is subjected to rigid inspection by craftsmen who for years have been trained to follow Bingham's high standards of manufacture.



A battery of "Even-Flo" Pumps installed for primary and secondary screen transfer service at St. Regis Kraft Mill, Tacoma, Washington.

Section of Inspection Department in our new modern plant.

SEND NOW for "Even-Flo" Folder No. 36. Gives detailed information on this remarkable pump.

Bingham DOUBLE VOLUTE RADIAL BALANCE PUMPS SINCE 1921

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for products that are poured ... and stored

Container papers benefit from Cyanamid Paper Chemicals

Container courtesy American Can Co.

Paper is going places these days, and doing things well which previously only more expensive materials could do. For instance, paper milk containers such as the one shown here are finding increased acceptance from the consumer—containers welcomed for their sturdiness, light weight, small space requirements and easy disposability.

In this forward march of paper to new markets, Cyanamid's paper chemicals are playing an important role. Cyanamid's ALWAX* Sizes, for example, impart such desirable qualities as resistance to water, lactic acid, and blood serum combined with better folding, creasing, scoring and crimping properties. Thus, paper becomes an ideal container material for frozen foods, dairy products, prepackaged foods . . . three huge markets right there!

Are *you* looking for new markets to conquer? Then contact your Cyanamid representative and tell him what properties you want in your papers and what markets you wish to reach. His recommendations will constitute a big first step toward reaching those markets where greater sales, more profits lie. *Trade Mark

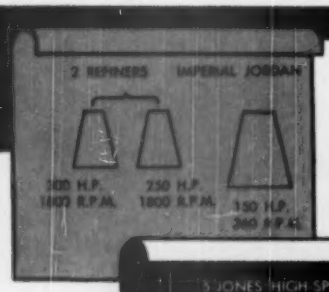
ALWAX* Sizes • WAXINE® Sizes • Rosin Size • PAREZ® Resins Synthetic Resins • Casein • Sulfonated Oils • Fillers • Defoamers Soda Ash • Caustic Soda • Salt Cake • Acids • Clays • AEROSOL® Wetting Agents • CALMICRO* Calcium Carbonate • AZITE* Liquifier 900 • Aluminum Sulfate • Sodium Phospho Aluminate. *Trade Mark

Sales Offices: Boston • Philadelphia • Pittsburgh • Baltimore Charlotte • Cleveland • Cincinnati • Chicago • Detroit • Kalamazoo St. Louis • Los Angeles • San Francisco • Seattle. In Canada: Dillons Chemicals Co. Ltd., Montreal and Toronto.

AMERICAN Cyanamid COMPANY

INDUSTRIAL CHEMICALS DIVISION, DEPT. PP6

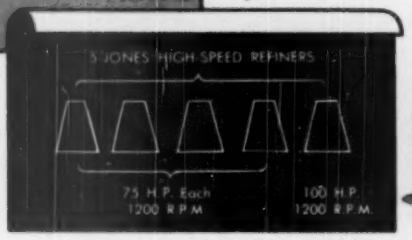
30 ROCKEFELLER PLAZA, NEW YORK 20, N. Y.



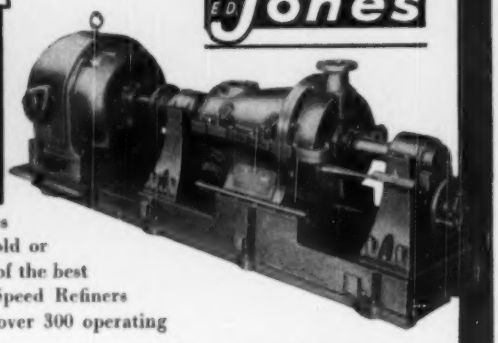
Better Control
More flexibility
better preparation

OLD INSTALLATION

NEW INSTALLATION



E.D. Jones



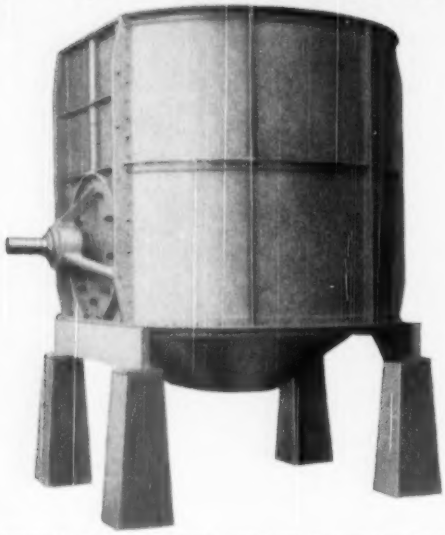
The refining equipment replaced (in this actual Jones installation) by Jones High-Speed Refiners was not old or obsolete or worn-out equipment. It represented some of the best current competitive thinking. . . . Yet Jones High-Speed Refiners actually produced improved stock — at a saving of over 300 operating horsepower. They save on maintenance cost, too.

E. D. Jones & Sons Company, Pittsfield, Mass.

For more information, write for Bulletin EDJ-1011A.

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY

Cut *HOURS* from your beating cycle



The unique 4-way pulping action of the PULP-MASTER provides complete disintegration of new pulp, wastepaper and even wetstrength papers in 10 to 40 minutes.

A New England mill reports: "We operate our Pulp-Master . . . primarily as a stock breaker . . . with stock of high consistency — 5½% to 7%. The Pulp-Master has reduced our beating cycle for all types of stock."

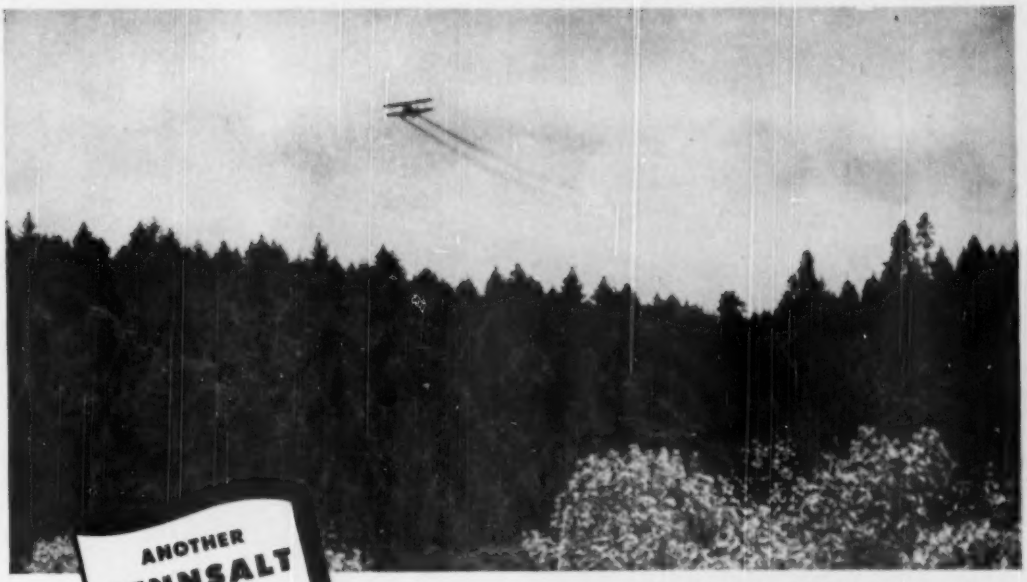
Available in four sizes: for batch or continuous operation. Write for Bulletin EDJ-1019B, or ask your Jones representative.

E.D. Jones

PULP-MASTER

E. D. Jones & Sons Co., Pittsfield, Mass.

BUILDERS OF QUALITY STOCK PREPARATION MACHINERY



LEADERS IN THE TIMBER BUSINESS spray their crop with Pennsalt insecticides to protect trees from damage by insects.

ANOTHER **PENNSALT** SERVICE

to the Pulp and Paper Industry

The nation's timber is prey to destructive insects as much as any other crop. To help protect our valuable forests, from which we get pulp for the production of paper, Pennsalt insecticides now find wide application.

For example, in 1949 Penco Forest Insect Spray—a DDT-base insecticide of high concentration—was sprayed by plane over thousands of square miles of Oregon spruce and fir. Federal and state conservation authorities were teamed together in a battle against the spruce budworm. The spraying operation was highly successful, and this year is being expanded in an all-out war on the budworm.

Such services are further contributions by Pennsalt to the success of the pulp and paper industry. During the past two generations, Pennsalt has supplied this industry with high-quality caustic soda and liquid chlorine.

With its current development of *insecticides* for forest pest control—and *herbicides* for keeping forest roads clear of undergrowth, and thus more secure from fire—Pennsalt helps to save our vast timber crop . . . the very foundation of the nation's pulp and paper industry.

OTHER **PENNSALT** PRODUCTS

- Anhydrous Ammonia
- Chlorine
- Caustic Soda
- Bleaching Powder
- Perchloron®
- Potassium Chlorate
- Sodium Arsenite
- Sodium Chlorate
- Sodium Hypochlorite

IN THE WEST: Pennsylvania Salt Manufacturing Company of Washington, Tacoma, Washington; Portland, Oregon; Los Angeles, California.

IN THE EAST: Pennsylvania Salt Manufacturing Company, Philadelphia 7, Pa.

PENN SALT chemicals

SPRUCE BUDWORM—most destructive insect enemy of coniferous forests.

PROGRESSIVE CHEMISTRY FOR A CENTURY

NEVER A DULL MOMENT

We've got plenty of problems. Some of our own—but mostly they're puzzles which customers have presented us with. We're having lots of fun, with now and then a little profit, in solving them.

In fact, that's why we're in business, and we'd like to tackle your tough ones, too. Big or little, they're welcome at Moore & White. Our sales engineers and factory folks will lick their chops at the mere thought of serving you, whether your grief arises from dire need of a complete paper-making assembly, or the mere malfunctioning of some minor piece of equipment.

No matter what its make, our boys will fix your balky machine if it can be fixed. They will not, believe us, importune you to buy that superior Moore & White equipment so long as you're satisfied with what you have.

When you cease to be so satisfied and favor us with an order for new machinery, we shall rejoice. More, we'll give that order personal attention all along the line . . . make delivery in such jig time that *you* will rejoice. Next to the quality of our products, we pride ourselves on our prompt service in all categories.

The MOORE & WHITE Company

15TH STREET AND LEHIGH AVENUE • PHILADELPHIA 32, PA.

CUSTOM-BUILT MACHINES FOR MAKERS OF PAPER AND PAPERBOARD

Represented on the West Coast by Dan E. Charles Agency, 618 Jones Bldg., 1331 Third Ave., Seattle 1, Wash.

NOW—a defoamer in handy 2½-lb. bricks!

Now you can buy your defoamer in easy-to-handle, easy-to-use bricks! No waste! No mess! No heavy drums to handle or ship back! Bricks quickly dissolve in water. One 2½-lb. brick of Defoamer 4* makes 40 gallons. Try this new, low-cost Hercules product today at our expense, and be convinced of its convenience and economy. Send for free sample brick.

HERCULES POWDER COMPANY 965 *King St., Wilmington 99, Delaware*

HERCULES

SIZING MATERIALS AND CHEMICALS FOR PAPER

—NO DRUMS TO HANDLE

—EASY TO USE, EASY TO STORE

—ONE BRICK MAKES 40 GALLONS

—FREE SAMPLE BRICK ON REQUEST

*PAT. APPLIED FOR

PP50-3

WHEN SEEKING THE SOLUTION
TO A WATER CONDITIONING PROBLEM
Remember
There's no substitute for Experience!

COCHRANE

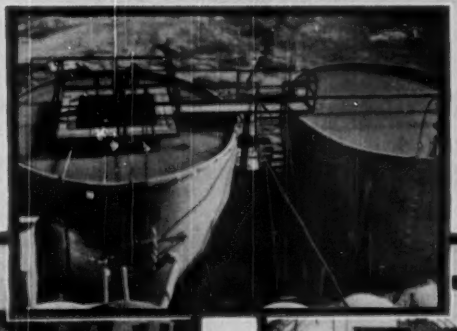
SLUDGE CONTACT REACTORS

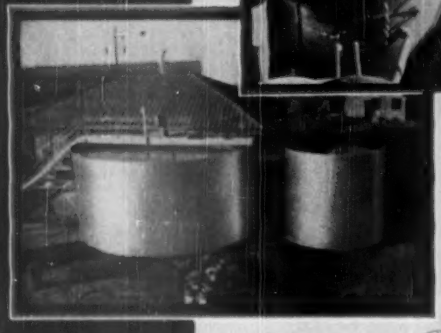
For the Clarification of Water and the Recovery of Waste in Process

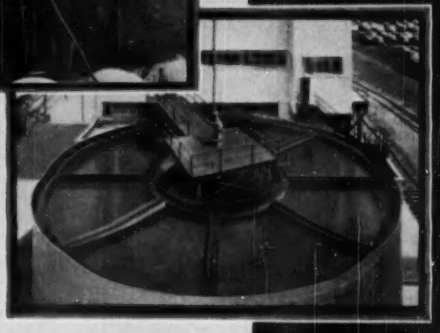
Clarifies water by use of sludge contact principle. Raw water and chemicals enter near the bottom of the tank. Motor driven agitator mixes them thoroughly forming floc or precipitate. The agitator also keeps the floc or sludge suspended, so that the water is both treated and filtered by the sludge bed or blanket as it rises in the tank.

COCHRANE's specialization in the conditioning of industrial water supplies over the past fifty years and the combined years of experience of Cochrane engineers in that field, is your assurance of satisfactory service from any Cochrane installation. In the new method of sludge contact or removal by flocculation of impurities, turbidity, color or hardness, the Cochrane Sludge Contact Reactor accomplishes all these functions with complete efficiency and surprising economy. A new bulletin, Publication 5001, is available and will be sent on request.

The inclined blades of the agitator cause water and sludge to be deflected to the center where the mixture rises through the central port and is then recirculated back to the bottom, saving chemicals and producing a heavier floc. Central steel baffles divide the Reactor into a mixing zone at the bottom and a clarifying zone at the top.







COCHRANE CORPORATION

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Sutherland Continuous Beaters

have proved that they can do MORE with LESS than any other stuff-preparation equipment. The advanced engineering and high unit-capacity of Sutherlands provide . . .

MORE

QUALITY—better formation, smoothness, finish and higher test
—without fiber destruction

Production Speed—faster drainage

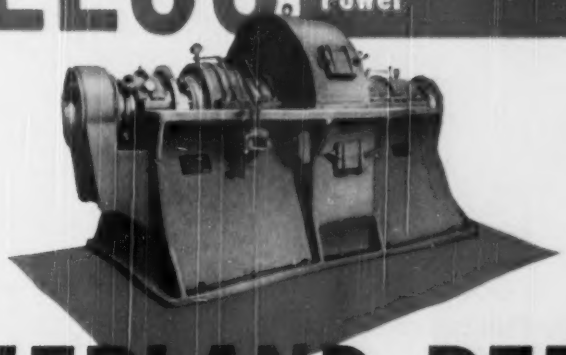
Flexibility—wide beating range

Profit

with

LESS

Investment per ton
Maintenance
Space
Power



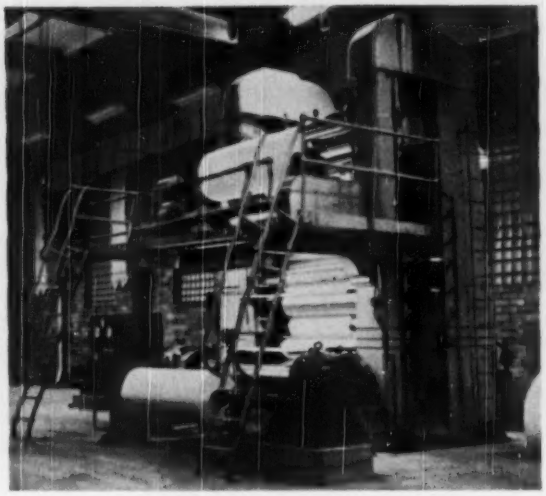
Ask us for our catalog.

SUTHERLAND REFINER
Corporation

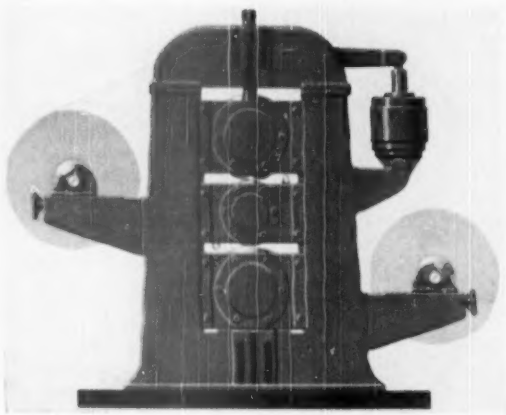
TRENTON, NEW JERSEY

Manufactured in the United States by Valley Iron Works Co., Appleton, Wisconsin
Sutherland Refiner Ltd., Windsor Hotel, Montreal, P. Q.

THE distinctive frames of the Appleton Supercalender have become a familiar feature in the finishing rooms of many mills manufacturing the finest high-finish papers, both in America and in Europe. Behind this singular construction are the very latest engineering advancements applied with an intimate knowledge of high-speed finishing requirements.



Higher Supering Efficiency · Improved Sheet Quality · Lower Operating Costs · Sustained High-speed Production · Precision Controls



Many improvements in paper finishing and coating have been developed with the aid of Appleton Laboratory and Experimental Calenders. The lab stack can be furnished as a Supercalender, Machine Calender, Sheet Calender and as a Caliper Calender or in combinations. The Appleton five roll Experimental Stack duplicates mill operating conditions and results on trial runs.

THE APPLETON MACHINE COMPANY • APPLETON • WISCONSIN

Sales Representatives • Castle & Overton, Inc., N.Y.
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APPLETON

Superfinishing Equipment

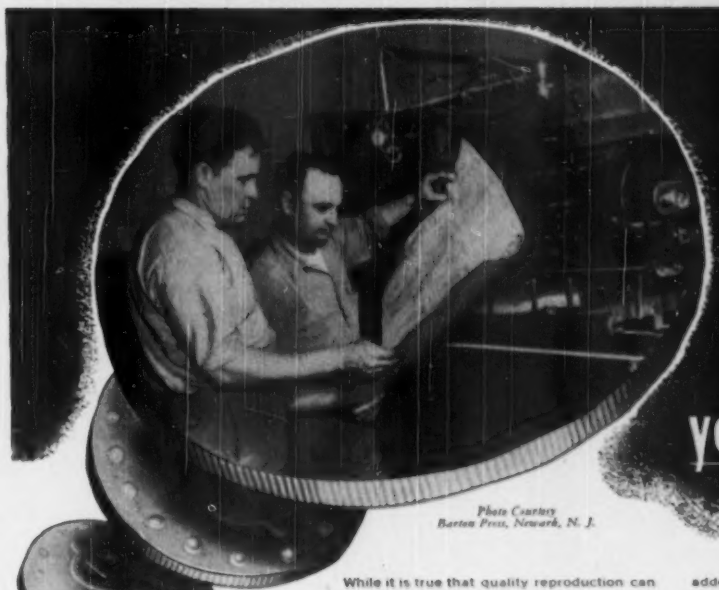

Photo Courtesy
Barton Press, Newark, N. J.

Make Sure your Coatings Protect your Profits

While it is true that quality reproduction can only be achieved when paper, ink and press conditions are compatible, paper is the dominant factor – and paper coating can largely determine results.

Sub-standard coating, therefore, is a sure way to customer dissatisfaction – and profitless operation for you.

Nopco* offers a number of products that have been specially developed to eliminate coating defects such as pinholes, fish eyes, uneven pigment distribution and dusting. These outstanding chemicals enable you consistently to obtain a finished sheet that insures ready consumer acceptance, wins repeat business, builds sales. Examples are:

NOPCO ESI – for control of foam in coating compositions. Improves flow and brushing characteristics when used with starch, casein or other adhesives. Enhances brightness and gloss. Gives uniform smoothness to final coating. Reduces dusting on the supercalender. Improves fold – minimizes cracking and flaking. Available in 55-gallon drums.

NOPCO 1497-B – for use as a defoamer in coating compositions which employ casein or other proteins as binder or adhesive. If added to adhesive after it has been solubilized by alkali, but before clay and color are added, Nopco 1497-B inhibits foam formation. If diluted with water and added to coating mix on coating machine, this Nopco product proves an effective foam killer. Available in 425-lb. barrels.

NOPCO 1600-B – for all general defoaming and leveling requirements. Works well with colored coatings. Nopco's strict system of manufacturing checks and controls assures absolute uniformity. Available in 55-gallon drums.

NOPCO 1400-B – for addition to paper machine coating when starch adhesive is used. Imparts water repellency. Prevents dusting – thereby reducing need for frequent washing of calender rolls. Available in 425-lb. barrels.

NOPCO SOAP-B – for plasticizing or lubricating the coating color. A high quality, low titre soap. Available in 80-lb. multiwall bags and 150-lb. barrels.

Full information about these products, and other Nopco paper chemicals for use in all phases of paper and paper board manufacture, is yours for the asking. In addition, our Technical Service Department is ready at all times to help you solve your production problems. Profit by writing us today.

*Reg. U. S. Pat. Off.

NOPCO CHEMICAL COMPANY

Formerly National Oil Products Company

HARRISON, NEW JERSEY

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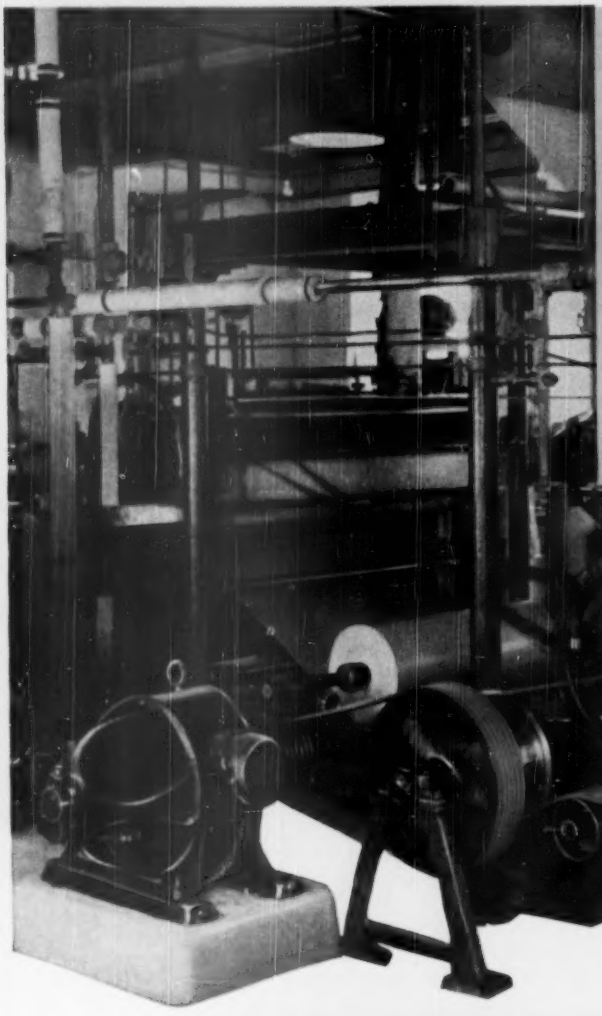

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Although packaged, Westinghouse factory-built drives are made by a "building-block" method that permits many optional features. These include: stepless, time-limit acceleration and deceleration, precision speed regulation, IR drop compensation and extra exciter capacity for multimotor drives.

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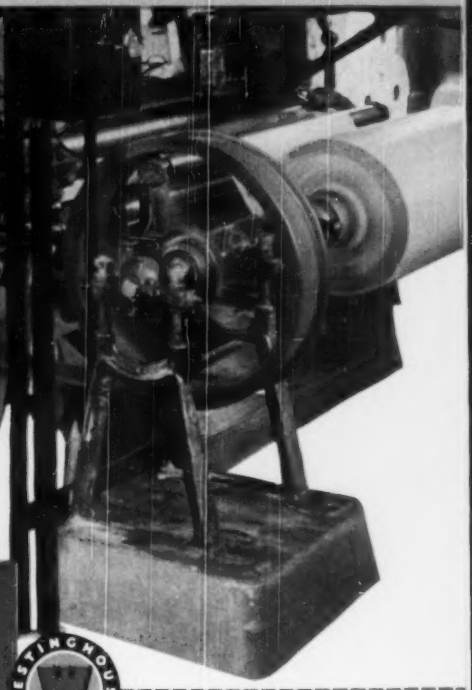
If you need an adjustable speed drive, Westinghouse Consulting and Application Engineers will gladly investigate your processes and recommend the packaged drive best suited to your requirements.



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For many paper machinery applications requiring a packaged drive, the improved performance desired can be obtained by using the type having an M-G set. Other machines require the all-electronic type for top performance.

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AV Life-Line Packaged Drive. This drive, using an M-G set, gives adjustable speed control up to a range of 16 to 1. It is a simple, factory-wired package housed in one self-ventilated cabinet. It is economical in every way—first cost, installation, power consumption, maintenance and floor space.

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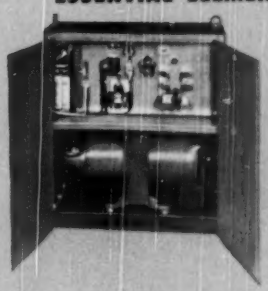
ESSENTIAL ELEMENTS OF WESTINGHOUSE PACKAGED DRIVES



This compact, freely-ventilated cabinet for the AV Life-Line Packaged Drive houses the complete power unit. The motor-generator set for power conversion, dynamically balanced to eliminate vibration, is rubber mounted in lower compartment. Cooling air for the M-G set is drawn through filters which are easily replaced.

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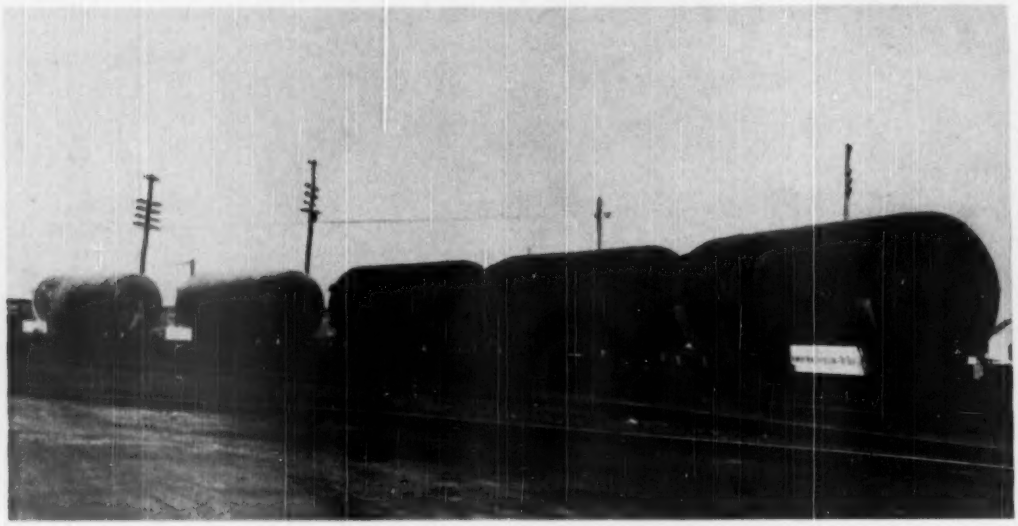
NEWPORT NEWS BUILT DIGESTERS



Erected In Record Breaking Time

Newport News recently built the five digesters shown above for a large southern mill. Of welded construction they are 39 feet 7 inches in length with a diameter of 12 feet 9 inches. At the conclusion of erection the following letter was received from the mill:

"May we take this opportunity to advise you that in the erection of these digesters we found that all of the dimensions were adhered to exactly and all of the flanges were perfectly true and level. In fact, we were surprised that you were able to fabricate in such close dimensions, as every digester fit perfectly without any shifting or redrilling.

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NEWPORT NEWS

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Newport News, Virginia

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of helpful facts to know about
COTTRELL ELECTRICAL PRECIPITATORS

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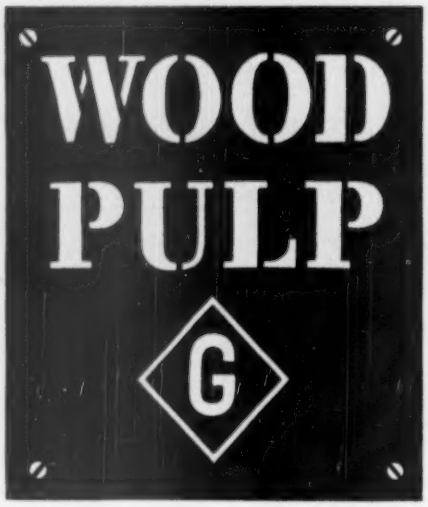

"What can we reason but from what we know?"

ALEXANDER POPE

The surest indication of "the shape of things to come" in Pulp and Paper lies in the impressive record of past accomplishments in this miracle industry. Year by year there has been almost incredible progress in chemical woodpulps.

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PULP & PAPER

—AND "CELLULOSE AGE"—MAGAZINE OF THE INDUSTRY COVERING NORTH AMERICA
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Just What Is Security?

As we complete the first half of the 20th century one of the great unsolved problems of management is how to satisfy the legitimate desire of the employe for more and more of what is now generally termed "security" and to satisfy a similar, legitimate desire on the part of the stockholder. This issue of security is so important today that it warrants more than a passing mention. Just what is security? The fact that we receive high dividends or high wages or are promised high pensions does not constitute security. People who have these benefits may be the most insecure of all. They may not recognize this lack of security, however, until it is too late. Basically, our economic security is dependent on our ability to make a product that people want to buy and to make it at a cost that permits the product to be sold profitably at a price that people are willing to pay. The stockholder who insists on too much money being paid out in dividends, not permitting enough to be left in the business to provide the most modern and competitive tools, the manager who does not devote his full measure of time and skill to his work or who takes more than his fair share for his labors, the workman who does not give his best performance or who asks too much for the work he does are all impairing their own security. In the old days the individual craftsman who worked in his own shop, supplied his own tools and sold his own product in competition with a neighbor down the street, could see this clearly. He might decide that a new house would be nice or that he ought to set aside a fund for his old age. However, if to do so, he had to add a dollar to the price of the shoes he made or the cloth he wove and as a result his customers started trading with his neighbor, he could quickly and easily tell that he had lost business and had impaired his security. Today our competition is not next door and we each may be performing only a small part of the job. As a result the comparison may not be so evident to many of us. But the competition is just as real—each stockholder, each manager, each workman is competing for the consumers' favor with other people doing these same jobs all over our country. We only lose our own security if we insist on benefits which we loosely think of as providing us with security when in reality they impair our ability to sell our product. We are trading away the substance of security for the form.

These truths are fundamental. They are the foundation upon which our economic system rests. Unless we understand them and act in reliance on them, we can lose our own security forever.—*Harry Eldridge, Vice President, F. C. Huyck & Sons.*

Hats Off to Mill Men— And to "Peddlers"

Mill men—alone and unaided—put on the serious and technical features of the first Pacific Coast convention ever held with all three of the Coast groups—Superintendents, TAPPI and Canadian—joining together for the first time as co-sponsors of one of the biggest meetings ever held outside of a "National."

This was the Seattle meeting in May. It was a high grade meeting. Every paper was a serious scientific study of management, operational or technical subjects of prime importance.

The speaker, in all but two cases, was a mill man with actual mill experience in a most practical way in regard to the subject he was discussing. Those two cases involved McGill University and University of Washington doctors who are so close and so informed on mill matters, that their talks were also to be considered in the same category.

But the mill men who put on this first rate program would be the very first to take their hats off to the "Migratory Peddlers" who quietly, and behind the scenes, arranged a very professional and high grade program of entertainment. The ladies had something to do every minute—in fact they even had a suite at the hotel set aside just for themselves where they could meet friends, rest up, etc.

The serious side of a meeting is important—Charles Reese, the keen-minded, busy president of the Superintendents was high in his praise of how the mill men put on this part of the performance. But the "fun" side is important, too, and the "Migratory Peddlers" of Seattle put in a lot of long hours getting things prepared on this line of endeavor.

A Sleeping Giant

"Wood contains all the ingredients for a well-balanced chemical industry. It does not take much effort to visualize what great things will happen when this sleeping giant is fully aroused."—*William J. O'Brien, vice president and chairman of research and development, The Glidden Company.*

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NEWS IN BRIEF • • • AND BULLETINS

Arkansas to Have Newsprint Mill

White Star Paper Co. is to be the name of a new company planning South's third big paper mill at Prescott, Ark. Officers of Dierks and Ozan lumber companies of Kansas City, Mo., which have large Southern pine tracts, are principals. Merritt, Chapman & Scott, engineering firm, New York, completes survey . . . . . .

Sonic Waves Successful in Recovery

Successful use of sonic waves to collect soda ash or salt cake from stack gases coming from recovery boilers is claimed in un-named mill said to be getting up to 90%. First attempt to use sonic energy in this industry was for drying and sheet formation in a Southern mill. Experiments still in development stage. . . . . .

Natchez Pulp Mill Scheduled to Open in June

First mill in world to make dissolving pulp from hardwoods by kraft process, built at Natchez, Miss., by International Paper Co., scheduled to be opened with local ceremonies June 3. Eight mild steel digesters, 60x13 ft., each weighing 98,500 lbs., with Esco circulation, largest ever made for kraft, were built by A. O. Smith Corp. at its Houston plant and all of the eight were lined with 4-inch carbon brick lining by Stebbins Engineering & Mfg. Co., Watertown, N. Y. Sandy Hill supplied Kamyr bleach plant; Goslin-Birmingham, the evaporator; Infilco, elaborate water filter systems; and Beloit, pulp machine. Special Tri-Clover stainless steel valves and fittings used widely. Ike East, long time manager at IP's Springhill mill, becomes manager at Natchez. E. E. "Gene" Ellis was resident construction engineer, serving under Chief Engineer George Ward of IP at Mobile headquarters. . . . . .

"We foresee a strong, long-term market for dissolving pulp," says John H. Hinman, IP's president. . . . . .

Oregon Sets 1952 Deadline for Pulp Mills

Oregon State Sanitary Authority May 9 issued orders forbidding five sulfite mills—Publishers' Paper Co., Oregon City; Crown Z at West Linn and Lebanon; Spaulding at Newberg and Oregon Pulp & Paper at Salem—from discharging "concentrated sulfite waste liquors" into the Willamette or South Santiam rivers during four months each year —July through October—and whenever Willamette flows less than 7,000 cu. ft. per sec. at Salem, this order becoming effective May 1, 1952. Ponding of liquor will be permitted if plans are approved by Authority. Mills are expected to enter appeals by June 9 deadline. Authority complimented mills on installation of savealls, but said this not enough—that "mills in other areas" were "able to meet their problems" by using ammonia or magnesia base cooking; evaporation of calcium bisulfite waste; production of alcohol or fodder yeast or miscellaneous by-products or by ponding liquor. . . . . .

Wage Rates Boosted on West Coast

Wage increases, holiday and vacation gains will boost income of 15,000 employes of 35 Pacific Coast (U. S.) pulp and paper mills by 7½ cents an hour after June 1, under agreement reached in 8-day long 16th annual Wage Conference in Portland, Ore., of Pacific Coast Association of Manufacturers and AFL unions (pending expected approval by referendum of union locals). Base rates boosted 3¢—to $1.47 an hour for men; to $1.20 for women (men's rate was only 40 cents in 1934, when conferences began). After 15 years' service, employes get third week of vacation with pay. New Year's, Thanksgiving and Memorial Day added to holidays with pay. . . . . .

Hawthorne Paper Co. Under New Ownership

George H. Gerpheide, president; M. H. Stetson, vice president for sales (who agreed to stay a short while); George T. Jubb, a director, and other officers of Hawthorne Paper Co., Kalamazoo, Mich., resigned and turned over complete management of that mill to new owners when it was sold to a group headed by William Slavin, president and treasurer, Western Board and Paper Co., Kalamazoo. Mr. Slavin was elected president; J. L. Slavin, vice president, and S. D. Katz, of Chicago, secretary. Two machines have capacity of 12 tons a day of fine papers. . . . . .

Improvements at Powell River Co. Authorized

Improvements to paper machines and auxiliary equipment, including screens, etc., to cost $3,000,000, are planned over next few years at Powell River Co., according to President Harold S. Foley. Improvements will increase production by 40,000 tons annually over this year's expected 300,000 tons production. . . . . .

Riegel Paper Corp. Expansion Plans

More than year ago these pages carried first official statement that Riegel Paper Corp. planned "some day" to build a new mill at Acme, N. C., adjacent to its timber holdings there. Rumors of ground-breaking, regular occurrence lately, were current in May, but John L. Riegel was touring Europe by car and reliable Riegel authority told PULP & PAPER: "Not yet and probably not soon, but we are still watching." . . . . .

LAWSON P. TURCOTTE, of Bellingham, Wash., Executive Vice President for past several years, was elected President of the Bellingham sulfite pulp company operations at a recent stockholders' meeting. He succeeded Fred G. Stevenot of San Francisco, who become Chairman.
ERIK EKHOLM, for years the General Superintendent, was promoted to Vice President, continuing his mill supervision. RALPH ROBERG was re-elected Vice President; WILLIAM SEELY, Treasurer, and HARRY BINZER, Secretary.

CHICAGO CONVENTION
Ackley Succeeds Reese; An Unusual Round Table

Our next issue will carry a highlighted, but comprehensive report on the significant technical and management news, culled by PULP & PAPER editors who will be in attendance, at the American Pulp & Paper Mill Superintendents' National Convention June 8-10 at the Edgewater Beach hotel, Chicago.

It will be written and illustrated for busy mill executive "to read in a hurry."

Last month we published a list of group meetings and highlights of the program. Charles E. Ackley, Crown Zellerbach Corp., West Linn, Ore., superintendent, will succeed Charles H. Reese, manufacturing v. p. of Nekoosa-Edwards, as national president of the association; 4th and 5th "veeps" will be elected and plans will be laid for a 1951 national convention in Portland, Ore.

Holding promise of being one of the most valuable round tables ever held was one headed by Vice Pres. Herbert T. Randall of Champion on the June 10 morning, when Charles R. Seaborne, executive veep of Thilmany; A. E. H. Fair, president of Alliance Paper; S. L. Foster, KVP's chief engineer and A. S. Anderson of Champion's industrial relations, will outline a superintendent's duties and functions in relation to management, engineering, research and control and personnel.

The Tomahawk portable chipper (described in our North American Review Number); machine coating abroad and at a Fibreboard mill in California; power developments; the semi-chemical hardwoods pulp mill at Consolidated Water Power, Wisconsin Rapids; how the weather bureau can help paper mills—these were a few highlights on the program.

MgO Sulfite Recovery

A NEW REPORT ON ITS PROGRESS

By Svarre E. Hazelquist
Technical Director, Pulp Div., Weyerhaeuser Timber Co., Longview, Wash.
and Charles E. Rogers
Development Engineer, Research and Development Dept., Babcock & Wilcox Co., New York

Recent papers presented by F. E. Hutton at Montreal (PULP & PAPER, Mar. 1950 issue, page 41) and R. E. Baker at Portland, Ore., (PULP & PAPER, Oct. 1949 issue, page 29 and page 42) have covered the mechanical details of the magnesium oxide sulfite waste liquor recovery process as well as early operation efficiencies.

In the meantime, since those papers were presented, the following three operational changes have been made which have permitted increases in capacity and have allowed for better evaluation of losses throughout the system.

1. While originally the multiple-effect evaporators were operated as a six-body quint, they are now being used as a six-body quad to increase evaporating rates at the required high liquor concentrations. Provision will be made to return to quintuple-effect operation because of the steam economies possible.

2. Originally the concentrated red liquor from the multiple-effect evaporators was passed through the cascade evaporators for further concentration and consequent cooling of the recovery furnace gases before being fired in the recovery furnaces. However, this liquor cycle resulted in the formation of foam and of calcium sulfate scale in the cascades both of which caused frequent interruptions in the fuel supply to the recovery furnaces. To avoid these effects, the liquor cycle has been changed in order to pass the weak liquor from the washers through the cascades for initial concentration, then through the neutralizing tank to the multiple-effect evaporators. The evaporators now deliver the final concentrated liquor through the heavy liquor storage tanks, functioning as the evaporator flash pot, to the furnaces without dilution from direct steam heaters. As a result we are able to operate the recovery furnaces continuously with liquor of elevated concentrations without interruptions from scale or foam.

3. This latter change in the liquor cycle further permitted us to control effectively the alkalinity of the liquor to the multiple-effect evaporators and maintain a pH of 7.0 continuously during our latest survey of system performance, thereby reducing the amounts of sulfur lost at the evaporators.

Since no major changes have been made to the system, it is our thought that at this time we should concern ourselves with present plant efficiencies and from these data attempt to arrive at performances which can be expected under conditions when known losses have been reduced to what we consider to be economic values.

In developing the possibilities inherent in this process, we have divided our presentation in two parts.

1. First, in order to establish what is representative of present operating conditions of the Weyerhaeuser plant at Longview, Wash., we have assembled an itemized tabulation of losses.

2. Secondly, on the basis of the above tabulation and on the basis of experience gained in the operation of the various

(Continued on Page 102)

IMPORTANT NEW FIGURES ON LONGVIEW PLANT

One of the most eagerly awaited papers of 1950 for the sulfite industry of North America is this one, presented by the authors May 13 in Seattle at the Western International Meeting of the Pulp and Paper Industry (sponsored by three associations—Pacific Coast Div. of American Superintendents; Coast Section of TAPPI, and Western Branch of the Canadian Technical Section).

For the first time since the startup in late 1948 of the Weyerhaeuser MgO plant in Longview, Wash., the first commercial scale installation of its kind in the world, authoritative figures are presented in this article of what is described as an "economically attainable balance" at this particular plant. That is, a balance of recoveries of magnesium oxide and sulfur dioxide for reuse in the sulfite process and of waste heat for the common power plant of the sulfite and kraft pulp mills.

Heretofore, the only official figures have been for pilot plant or small scale experimental operations and the preliminary figures first presented at the National TAPPI meeting in Portland, Ore., last September by Ray Baker, Weyerhaeuser manager at Longview, which were substantially below the goals. Here are comparisons:

MgO RECOVERY PROCESS AT LONGVIEW

	Early Data (for week Aug. 16-22, 1949)	*New Data—Economically Attainable. (Based on Mar. 9-18, 1950 Survey)*
Sulfur recovery	64%	70%
MgO recovery	74%	88%
Usage per ton/pulp:		
Makeup sulfur	103 lbs.	71 lbs.
Makeup MgO	49 lbs.	20 lbs.
Pure MgO	44 lbs.	18 lbs.
Heat recovery (lbs. steam at 621 psi and 715°F. per A.D. ton of pulp):		
Liquid solids fired	6,845 lbs.	9,000 lbs.

The MgO plant is the result of over 15 years research and experimental work. George H. Tomlinson, vice president of Howard Smith Paper Mills discovered magnesium oxide could be substituted for the conventional calcium oxide as the base for sulfite pulp cooks and when burned, permit recovery of both sulfur and MgO ash in a desirable form for reuse. His company installed a pilot plant at Cornwall, Ont. Meanwhile Weyerhaeuser began investigations and a pilot plant also was built at Longview. These companies and Babcock & Wilcox jointly developed the unique process, carried to completion at Longview under the successive Pulp Division managers of Weyerhaeuser Timber Co.—R. B. Wolf and Howard Morgan.

Otto C. Schoenwerk, of Chicago, designed the plant at Longview, anticipating and helping to solve many of the practical problems.

A complete description of the process and of all the important equipment in the plant as it started up, was published in an exclusive, authoritative article in PULP & PAPER, Nov. 1948 issue. A limited number of reprints are still available for the nominal price of 25 cents each. It will be noted that the first section of the article published on these pages describes a few changes which have been made in equipment and process.

It is important to stress that the data presented is exclusively for the mill at Longview—other mills which may put in MgO plants have different conditions to face. Each one would have unique and, no doubt, difficult problems to solve. And of course, results in each plant may be better or worse.

NEW WOOD INDUSTRY

Complete Story of Fibreboard Mills

EARL WARREN
GOVERNOR

State of California
GOVERNOR'S OFFICE
SACRAMENTO

April 6, 1950

Mr. Miller Freeman, Publisher
Pulp and Paper Magazine
121 Second Street
San Francisco 5, California

Dear Mr. Freeman:

I am pleased to congratulate Fibreboard Products, Incorporated, upon the completion of its new multi-million plant on Suisun Bay at Antioch. This is an important step forward, not only for the City of Antioch and Contra Costa County, but for the State as a whole.

In addition to providing employment for 380 persons, this new large-scale pulp and paper plant in California gives us a home market for many forest products formerly wasted or considered uneconomical to use. This means a higher degree of utilization of California's forest resources and paves the way for improved standards of forest management.

With the tremendous growth and development of California in recent years, we have reached a point where we are beginning to measure our future by our conservation programs. This is true of all our natural resources but particularly of our forests, since California has greater dependence on forest products than any other state.

During the past eight years, the forest industry and the State Government have worked together to place in operation a strong forest program. Major points of this program are: (1) Mutually-approved forest practice rules now govern the timber harvest on all privately owned forest land. (2) Forest fire protection measures have been intensified. (3) Substantial headway has been made in reducing losses due to forest insects and disease. (4) A system of State forest demonstration areas has been initiated and technical forestry advice is being provided by the State to timber owners.

To further advance this progressive forest program, a higher degree of timber utilization is one of our most urgent needs. Fibreboard Products' new pulp and paper plant shows us one way this can be accomplished, and I hope that it will be the forerunner of a large-scale development of new wood using industries in California.

With best wishes, I am

Sincerely,

Governor

EW:ajc

As the attention of the forest products industries of the United States turns more and more to the complete use of all the material taken from the forest, the eyes of the industry are focusing on East Antioch, Calif., for here, at the new San Joaquin Division of Fibreboard Products Inc. is one of the most complete wood utilization programs in the nation.

It was during the war that far-seeing executives of Fibreboard Products Inc. envisioned a great pulp and board mill on the banks of the San Joaquin River, just four miles east of their long-established plant in Antioch. The new plant would be part of a 10-year expansion and plant betterment program started in 1946, involving capital expenditures upwards of $50,000,000. The San Joaquin Division, together with the timberlands, private railroad, private logging roads, and receiving yards located at various points in the state represents a total outlay of many millions.

Wood Supply

Fibreboard began acquiring forest lands. In 1947 Fibreboard purchased in excess of 75,000 acres in eastern California and western Nevada. Majority of the acreage lies in Placer, Nevada, and Sierra counties adjacent to Truckee, California. Hobart Mills, a former sawmill town, seven miles north of Truckee, was purchased as a headquarters for logging activities.

A private railroad was built from Truckee to Hobart Mills. Logs are transported from the woods by logging truck, and reloaded into gondola cars at Hobart Mills. From Hobart Mills, approximately 21 miles of private logging road have been built to tap the virgin timber in the Webber Lake tract. This road averages 20 ft. in width with intervisible turnouts about every 500 ft. Bridges and culverts are nearly all concrete and corrugated metal piping. The road has been well surfaced with crushed rock and gravel. Grade and curvature on the road have been held to minimum which will allow fast travel with heavy, off-the-highway logging trucks and trailers.

Fibreboard is logging principally red and white fir for pulp. Lodgepole pine will be logged provided economical methods for handling this species can be developed. Ponderosa, sugar, and western white pine logs will be sold to sawmill interests, either at Hobart Mills or elsewhere.

Fibreboard plans to contract all its logging at Hobart Mills. A complete logging plan is still in the formative stage. Present plans are to truck pulp logs to Hobart Mills where they will be loaded into gon-

T. N. BLAND
San Francisco, who advanced to the Presidency of Fibreboard Products Inc., last December.

dola cars either by crawler crane or a McGiffert steam jammer. Logs will go forward from Truckee to East Antioch over the Southern Pacific and Santa Fe railroads.

The U. S. Forest Service and private owners also control a large acreage of timberland tributary to Hobart Mills and Truckee. Fibreboard hopes to develop a co-operative cutting program with the government and other owners, whereby orderly cutting will maintain a growing, producing forest for all time. Forest lands near Truckee are primarily a reservoir of supply for the San Joaquin Division mill at East Antioch.

To conserve its own timberlands at Truckee, Fibreboard is currently purchasing Douglas fir pulp logs from private owners in the Redwood coastal region. Decking and loading yards are in use at three points on the Northwestern Pacific railroad. The Jensen Lumber Co. Arnold station, nine miles north of Willits, has a logging highline used to deck and load logs into cars. This is powered with a Washington Iron Works Tyler system skyline machine. The three-drum Washington skyline machine is powered with a 150 hp. Cummins Diesel engine, working through a Twin Disc Torque Converter. The skyline is some 1,600 ft. long, and the main line is 2 in. wire rope, the lift line is 1-⅛ in., and the haulback is ¾ in.

At Lytton, some four miles north of Healdsburg, the Hedgpeth Logging Co. decks and loads logs with a crawler crane for Fibreboard.

At Forestville, some 11 miles northwest of Santa Rosa, Fibreboard has its own log yard. One small logging side is operated by Fibreboard, and other logs are purchased delivered at the yard. Decking and loading is done by Fibreboard with a 3 cu. yd. Lima crawler crane.

Logs from all three points are loaded in gondola cars, about 9,000 bd. ft. to the car, and shipped to East Antioch for storage and processing. Shipments of Douglas fir pulp logs from the Redwood Empire have been underway since Nov. 1949.

But Fibreboard was not satisfied with just taking cull logs and operating on material from its logging operations. It had occurred to its officials that thousands of board feet of usable material was going up in smoke from burners of California's sawmills and planing mills. So a program was planned to utilize this waste material.

At a number of selected California sawmills Fibreboard has installed a Carthage chipper, a conveying system, and other facilities for chipping sawmill slabs. These chips are conveyed into railroad cars and shipped to East Antioch. Thus these sawmill operators have gained a profit out of what was waste, and, as one operator put it:

"We have a tough time even keeping our burner going now, so much of the former waste material is being converted into chips for Fibreboard."

Another source of waste materials are the planing mills and box factories of northern California. Box factory and planing mill waste is brought to East Antioch in trucks and railroad cars and purchased by Fibreboard. Heretofore, this material went up in smoke.

New Products and Capacities

The new mills are in two units—No. 1 Unit, the Tuf-Fir side, and No. 2 Unit, the bleached Kraft mill. Products of the pulp and board mill of Fibreboard's San Joaquin Division are Tuf-Fir (trade-mark registered), a nine point kraft corrugating material used for shipping containers, and bleached kraft board for making food containers, file folders, tag and miscellaneous products.

On the Tuf-Fir side, the pulp tonnage from this mill was planned for 120 tons daily. After allowing for shrinkage in process, trim, etc., the company expects a yield of approximately 110 tons. Production of this tonnage requires approximately 3 million board feet per month of wood waste material, the majority of which would otherwise be wasted.

On the standard kraft pulp and board mill side, it is planned to produce 150 tons per day, of which 125 tons will be put through the bleaching department. The bleached pulp will be converted into carton board for food containers, etc. The remaining 25 tons of unbleached pulp will be shipped to other Fibreboard mills for

FACTS ABOUT NEW MILL

Here are principal facts about new San Joaquin Division of Fibreboard Products Inc.: It is only wood pulp and board mill in California, or anywhere west of Texas, and Minnesota, outside of Washington and Oregon. It is first kraft mill in California, first chemical process mill of importance since sporadic venture into sulfite in last century in same region.

Wood Supply—cull logs in virgin timber, mostly red and white fir, from 75,000 acres owned by Fibreboard. Purchases Douglas fir from coastal region of California. Waste wood formerly burned from several California sawmills, where Fibreboard has installed Carthage chippers, and waste from planing and plywood mills and box plants.

"Tuf-Fir" Mill: Makes new .009 kraft corrugating material, said to be first ever made 100 per cent of coniferous wood by Chemipulper-Defibrator system, trade marked "Tuf-Fir," daily capacity 110 tons. Used wood waste (utilizing 3,000,000 bd. ft. per month, equivalent to 600,000 cords). All incoming chips to two new-type outdoor 75x-1,600 ft. storage troughs. Conveyed to blending tanks and screens, then to 3 American (Asplund) Defibrators with B-K reaction chambers, then to 2-stage IMPCO washing system, then to Sutherland refiners. Next is No. 1 machine, a Pusey & Jones, 156-inch Fourdrinier seven-action machine with GE sectionalized amplidyne drive and Ross air system. Spent liquor from defibrators sent to kraft mill (an unusual recovery).

Kraft Pulp and Board Mill: makes cartonboard for food containers, from bleached pulp, daily capacity 125 tons; can ship 25 additional tons of unbleached pulp to other Fibreboard boxboard plants. Uses log wood (about 4,000,000 bd. ft. per month—equivalent to 800,000 cords).

Logs hydraulically barked by Sumner Bellingham-type barker; 20 ft. logs up to 42 in. dia. go through 175 in. Sumner chipper; smaller wood to an 84 in. chipper. Large chipper is believed first in entire industry driven directly by steam turbine, which GE supplied. Three 3,800 cu. ft. A. O. Smith stainless-steel lined digesters equipped with Esco indirect cooking; believed to have largest blow lines in kraft. Impco washing, screening, decking follows. Impco four stage bleach process is next. Stock goes through Sutherland refiners to No. 2 machine, 136-in. Black-Clawson 10 section machine with GE multiple generator drive, followed by Langston winder.

Water use from San Joaquin River totals 14 million gallons daily. A Dorr clarifying system is used. Principal chemical units are Goslin-Birmingham sextuple effect evaporators; Babcock & Wilcox 100,000-lbs. per hr., 600 lbs. pressure recovery boiler; Research Corp. Precipitator; Dorr causticizing; Swenson sludge filter; Allis-Chalmers lime kiln. Two B&W boilers of 160,000 lbs. per hour capacity at 600 lbs. pressure each, and GE 5,000 KVA turbine generators and Westinghouse switchgear feature power plant.

T. N. Bland is president of Fibreboard (succeeded D. H. Patterson Jr., still a director, last December); Robert E. Bundy is vice president in charge of production. Mr. Bundy's predecessor, N. M. Brisbois, vice president, and Leland S. Rosener, consulting engineer, directed planning and construction of the new mill. E. W. Erickson, loaned by Crown-Zellerbach, was resident consultant. C. M. Stitt was resident manager during construction; now heads Fibreboard's new Central Engineering. C. R. P. Cash is resident manager.

Fibreboard now has two pulp mills (a sulfite mill at Port Angeles); seven paperboard mills and eight converting plants with combined daily output of over 1,000 tons of boxboard.

HERE'S THE BEGINNING OF THE STORY AND THE END visualized in this group of pictures. Top left: A cold deck of logs for the Fibreboard mill at a lumber camp at Arnold, Calif. A Washington Iron Works (Seattle) skyline machine decks and loads logs. Below, left: A General Electric diesel engine brings load of logs into East Antioch mill yard.
Upper right: Fibreboard's attractive sign showing products—one of first things erected at mill site over two years ago. Lower right: Truckload of bleached kraft board on way to one of the other Fibreboard mills for conversion.

D. H. PATTERSON, JR. long time President of Fibreboard Products, Inc., now continuing as Member of Board of Directors.

other boxboard needs. Based on the above daily tonnage, the standard kraft mill will require approximately 4 million board feet of log wood per month.

Wood Preparation

When the pulp logs arrive at the San Joaquin Division, the entire car load is lifted from the car by two cable slings, previously placed in the cars at the loading yards. Unloading is done by a 100 ft. span P & H 50-ton capacity bridge crane which extends over the car tracks on an overhead craneway. This overhead craneway extends about 640 ft. at right angles to the car tracks and provides storage space for about four and a half million feet of pulp logs.

If the logs are not to be stored, they are dropped by the crane on a live deck, with two sets of Link-Belt transfer chains. These transfer chains take the logs to a Sumner Iron Works bull chain, and on that chain, as they go into the sawmill, the logs are trimmed either by a Sumner Iron Works 96" cut-off saw or a Sumner 10' drag saw.

The logs are kicked out of the log haul by a Sumner air log kicker, with air supplied by one of the three 900 c.f.m. Ingersoll Rand air compressors, on to a transfer chain that carries them to a Bellingham-type hydraulic barker, built by the Sumner Iron Works, and controlled by motors and controls supplied by the Westinghouse Electric & Manufacturing Co. Water is ejected from the nozzles of the barker by two Byron Jackson pumps, pumping 600 g.p.m. each at 1,200 lbs. pressure. These Byron Jackson high-pressure water pumps are driven by General Electric steam turbines.

After the logs are barked they are kicked out of the barker and they can go either direct to a chipper or, if they are over 42 in. diameter, they go to the 9 ft. Sumner Iron Works band mill, with Simundson turner and Sumner no-man carriage, and Sumner Hill nigger.

If the log is under 42 in. it can go by a series of Vee rolls to one of two chippers. Both chippers were supplied by Sumner. One is 175 in. and is powered with a 2,500 hp. General Electric Turbine operating at 600 lbs. pressure and driving through a Farrell-Birmingham gear unit. The Farrell-Birmingham gear unit also drives an Ingersoll Rand compressor which acts as a brake on the chipper, and as a booster for the sawmill air system. This huge chipper handles 20 ft. logs up to 42 in. diameter, such logs being chipped in about 18 seconds each. The turbine exhaust is used for process steam. This is said to be the first application of its kind. Bark is conveyed to a bark disposal unit furnished by Rees Blowpipe & Manufacturing Co.

The smaller chipper, also by Sumner, is 84 in. and is powered with a Westinghouse 350 hp. motor.

The wood mill is also equipped with a 6½ ton P&H clam shell, on a 50 ft. span for handling cordwood, and over the big chipper, turbine and gear drive is a 50 ton Ederer bridge crane, 38 ft. span. All the transmission machinery used in the wood room was furnished by Sumner.

N. M. BRISBOIS long-time Vice Pres. of Fibreboard, who had leading role in direction of planning and construction of new mill. Turned over his responsibilities to R. E. Bundy last year.

In the wood mill all the pneumatic kickers and niggers, etc., are electrically controlled through solenoid valves.

Equipment in the filing room is most modern, there being an Armstrong band saw sharpener, an Armstrong stretcher roll with Armstrong air swedge, a Hanchett circular saw sharpener, and a Hanchett knife grinder.

The chips from the big chipper dump onto a Link-Belt chain feeder which in turn dumps onto a 60 in. Goodrich belt conveyor, traveling at 550 ft. per minute, and 179 ft. long. This conveyor dumps into a surge bin which provides an even feed into the three Sumner chip screens.

Oversize chips run through a Waterville hammermill rechipper and then are returned to the system. Fines from the kraft chips are dumped into the Tuf-Flr system and accepted chips, by a series of cross-conveyors, are dumped onto a 36 in. belt conveyor 291 inches long, which leads to the three steel chip storage bins or silos built by Consolidated-Western Steel

One thousand Vickery Felt Conditioners have been purchased after and as a result of actual operating experience with an initial installation. What stronger evidence of practical value could there be?

How about *your* press felts? Are any of them still permitted to get progressively filled up and dirty, causing mid-week shutdowns, uneven paper finish, excessive burden on the dryers where water removal costs many times as much as at the presses? If so, ask us for recommendations and estimates.

BIRD MACHINE COMPANY
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ROBERT E. BUNDY
Vice President in Charge of Production of all mills and plants of Fibreboard Products Inc. Was former Manager at Port Angeles.

Corp., which provided most steel tanks at the plant. These silos are 64,000 cu. ft. capacity each. One holds chips for the Tuf-Fir side, and the other two for the bleached kraft side.

It might be noted here that practically all gear reducers and gear motors were supplied by Western Gear Works—Pacific Tool & Gear Work.

Here, then, is the system for supplying chips for the bleached kraft side.

Chips for Tuf-Fir Mill

Chips for the Tuf-Fir or nine point corrugating material mill No. 1 Unit— are destined for Chemipulper-Defibrator system, and they come from two sources—waste from planing mills, box factories, and plywood plants; and from the sawmill slabs that were chipped up in the foothills of the Sierra, miles away from the pulp plant.

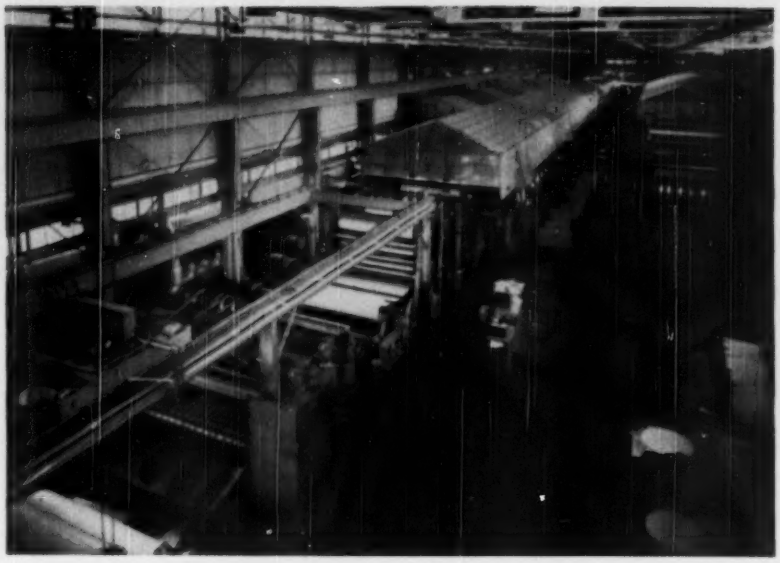
The waste from the planing mills, box factories, and plywood plants comes in in trucks and gondola cars, and is dumped into a Link-Belt track hopper which feeds a 30 in. belt conveyor taking the material to a Model ST60 Williams hammermill, powered by a 300 hp. Westinghouse motor.

The chips from the sawmills are unloaded from the cars by a huge gantry-type suction loader-unloader running along a track. The heart of the suction loader-unloader is the Sutorbilt pneumatic conveyor. There are two of these units located on the gantry. Each system is composed of a 22x36 Sutorbilt rotary positive blower powered by a 150 hp. motor and an 8 foot product recovery unit which receives the chips and drops them out through a 30x30 Sutorbilt Rotary Seal Feeder Valve requiring a 10 hp. motor.

The 22x36 Sutorbilt blower runs at 285 rpm. with a capacity of 6 000 cfm. at 8 in. Hg. vacuum and requiring 130 hp. The conveying rate then obtained is 2,000-lbs. per minute of slabwood chips or 60 tons per hour moved through a 10 in. pipe line at a speed of 11,000 ft. per minute.

The chips enter the product recovery unit where they drop out of the air stream and are passed out through a Rotary Seal Feeder Valve onto a belt conveyor or into chutes and then to storage as described below, with the air stream continuing to, and through the blower and out to atmosphere.

The chips are stored in two troughs 75 ft. wide, and 1,600 ft. long, making a most economical storage arrangement. Sufficient space is thus given, when filled, to take care of approximately 20,000 units of chips of 200 cu. ft. each. Enough chips are stockpiled during the summer to hold the plant over the winter when the chips aren't available from the mills. This is thought to be the first time this method of chip storing has been used anywhere.



GENERAL VIEW OF MACHINE ROOM, SAN JOAQUIN DIVISION, Fibreboard Products Inc. Left is Black-Clawson bleached kraft cylinder machine, and right rear is the Pusey & Jones Fourdrinier Tuf-Fir nine-point machine. J. O. Ross Engineering Co. hoods are over both machines and they have G-E drives.

For recovery from the stock pile, the gantry-type suction loader-unloader has a suction pipe that goes out to the piles of chips. Here a "Cat" D2 with a "Cat" 'dozer', dozes the chips to the mouth of the suction pipe on the gantry, while the gantry is continually spewing chips into two electric cars that shuttle back and forth to a track hopper located opposite the screen room. At the bottom of this hopper is a flight conveyor built by Link-Belt 50 ft. long, that dumps the chips on a belt conveyor. The belt conveyor, 30 in. wide and 239 ft. long, traveling at 450 ft. per minute, conveys the slabwood chips into a 10,000 cu. ft. blending tank.

There are two of these blending tanks, both built by Consolidated-Western Steel Corp. One is for the slabwood chips from the sawmills, as described, and the other is for the planing mill, box factory, and plywood plant waste chips. Material is conveyed to these tanks separately, i.e., one tank holds one kind of material, and the other, the other kind.

These tanks are fitted with Link-Belt rotary plate feeders, each with a capacity of 40 tons per hour. Both feeders dump onto a 30 in. belt conveyor which sends material to the Sumner chip screens, with the oversize chips going through a small Williams hammermill and then being returned to the system.

After going through the Sumner screens, the chips are conveyed to a chip silo. The mill waste and the slab chip material is now completely blended, and ready for the No. 1 side, the Asplund or Tuf-Fir side.

There are 11,880 ft. of broad gauge railroad track in the plant and about 60 cars daily are handled in and out by a 44-ton General Electric Diesel switcher powered with a "Caterpillar" engine. Up at the Truckee operation of the Division a 70-ton GE locomotive powered with a Cooper-Bessemer Diesel engine will be used.

Chips for the Tuf-Fir side are washed by a chip washer designed by Fibreboard and are immersed in water by a sloping screw conveyor built by Link-Belt and then de-watered on two Tyler Ty-Rock screens.

Operation Flow of Tuf-Fir Mill

From the screen the Tuf-Fir chips are conveyed on a rubber belt to three hoppers feeding three Asplund defibrators, manufactured by American Defibrator, Inc. These are equipped with B-K reaction chambers manufactured by Paper & Industrial Appliances, Inc. The Defibrators are powered with 250 hp. synchronous Westinghouse motors. The Chemipulper-Defibrator units are equipped with Cutler-Hammer controls.

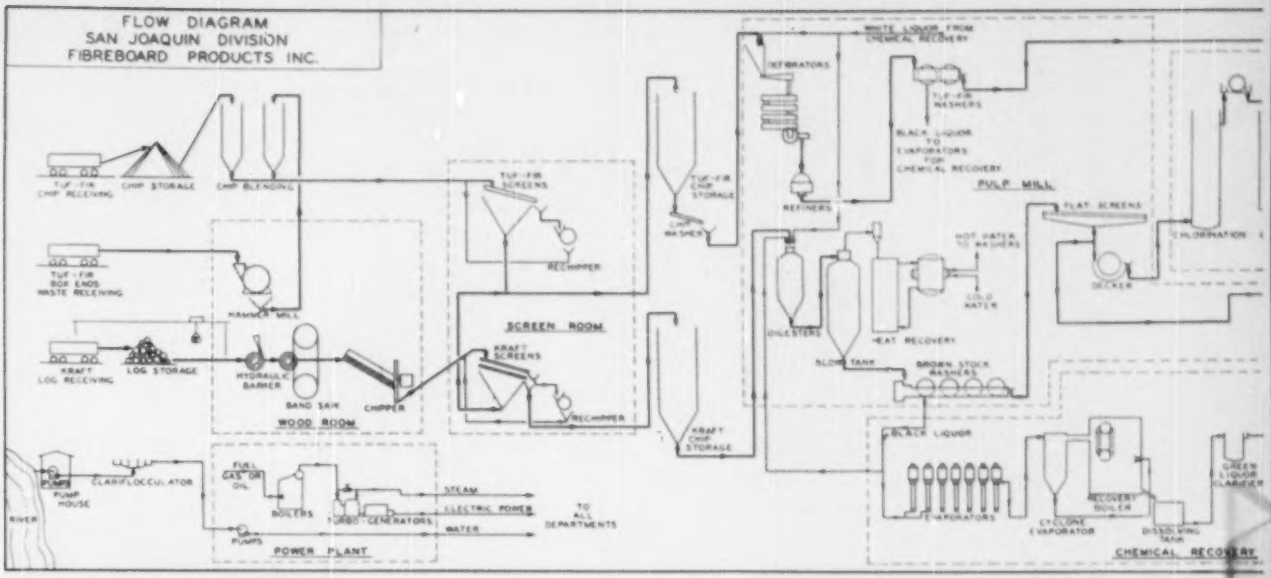
After the Chemipulper treatment the material goes through Sutherland hot stock refiners powered with Westinghouse motors. All Sutherland refiners in the plant have stainless steel discs.

From the final Sutherlands the stock goes to a Pusey & Jones Fourdrinier machine, 156 in. wire, equipped with a Pusey & Jones flow spreader, Beloit suction couch, two Beloit suction presses, and one Pusey & Jones calender stack.

A number of large capacity Nash pumps are installed at the plant. On the Pusey & Jones machine there is a K-7 Nash

OIL PAINTING BY L. A. A. REESE

"Pouring off" in the foundry at Beloit Iron Works, Beloit, Wisconsin. From this big modern plant, embracing over 400,000 square feet devoted exclusively to the manufacture of pulp- and paper-making machinery, have come precision machines of highest quality since 1858.



CLAUDE M. STITT (left), who was Resident Manager, San Joaquin Div., during construction and now heads Fibreboard's Central Engineering. He was succeeded by C. R. P. "Dick" CASH (right), who stepped up from General Supt. to Resident Manager.

pump to handle the flat boxes, two H-11 Nash pumps for the suction couch, and two H-10 Nash pumps for the suction presses. There is also a K-6 Nash pump for the felt conditioner.

On the Pusey & Jones machine, as on the Black-Clawson machine which is in the No. 2 Unit, Bird-Vickery doctors are supplied on the calender stacks. There are two Hanna cylinders on the two suction presses of this machine and on the suction couch.

The Pusey & Jones machine is also equipped with Masoneilan Exactaloads for the presses, and it has Foxboro pneumatic loading controls and Gilbert & Nash wire guides.

The Pusey & Jones machine has seven sections, each with its own General Electric drive consisting of a motor with its own Amplidyne controlled supply generator. Master control provides speeds from 300-1,200 ft. per minute. The machine at the present time has sufficient drying capacity to operate at approximately 600 ft. per minute. However, additional driers can be added at some later time so that the machine can operate at speeds up to 1,200 ft. per minute. All parts of the machine are designed to operate at speeds up to the maximum of 1,200 ft. per minute.

Each section is automatically kept at the right speed and held in step with the rest of the sections by the electronic amplidyne control system. In this system a pilot generator on each section feeds a signal into the electronic amplifier and at the slightest variation of section speed from that desired, the signal, in amplified form, is passed on to the Amplidyne field control of the section's generator with the result that the speed is very quickly and accurately adjusted to the right level. In addition to the automatic control, each section has a manual control providing for as much as 10 per cent speed change for draw adjustment at the call of the operator. Total horsepower on Machine No. 1 is 720.

The nine point is wound on a Pusey & Jones uniform speed Pope reel and rewound on a Pusey & Jones winder. The paper is re-wound with a GE powered regenerative tension winder drive. It is an Amplidyne controlled motor generator drive much like that of an individual section of a paper machine. In this system the braking is regenerative. Instead of dissipating the energy in a mechanical brake, it is converted into electric power and fed back into the line. The same equipment that puts energy back into the line when the roll is spinning too rapidly also applies power for speeding up the roll if it is turning too slowly. Its flexibility permits the operator to maintain rewind tension easily and accurately.

Midwest Fulton Co. supplied the condensate circulation system on both machines, and both machines are equipped with Nash vacuum pumps and Shartle Bros. pumps.

In the Chemipulper operation, Fibreboard uses an unusual system for handling the kraft liquor. The kraft liquor and steam is introduced into the B-K reaction chambers and the spent liquor from the washers is sent to the kraft recovery department.

Normally in the Chemipulper-Defibrator system, plants do not recover the liquor but Fibreboard does according to its engineers, in interests of the avoidance of stream pollution.

Heating and Ventilating

J. O. Ross Engineering Corp. supplied hoods over both machines, hoods over all black stock washers, and provided the ventilation system for machine room, stock preparation, wash room, and bleach plant.

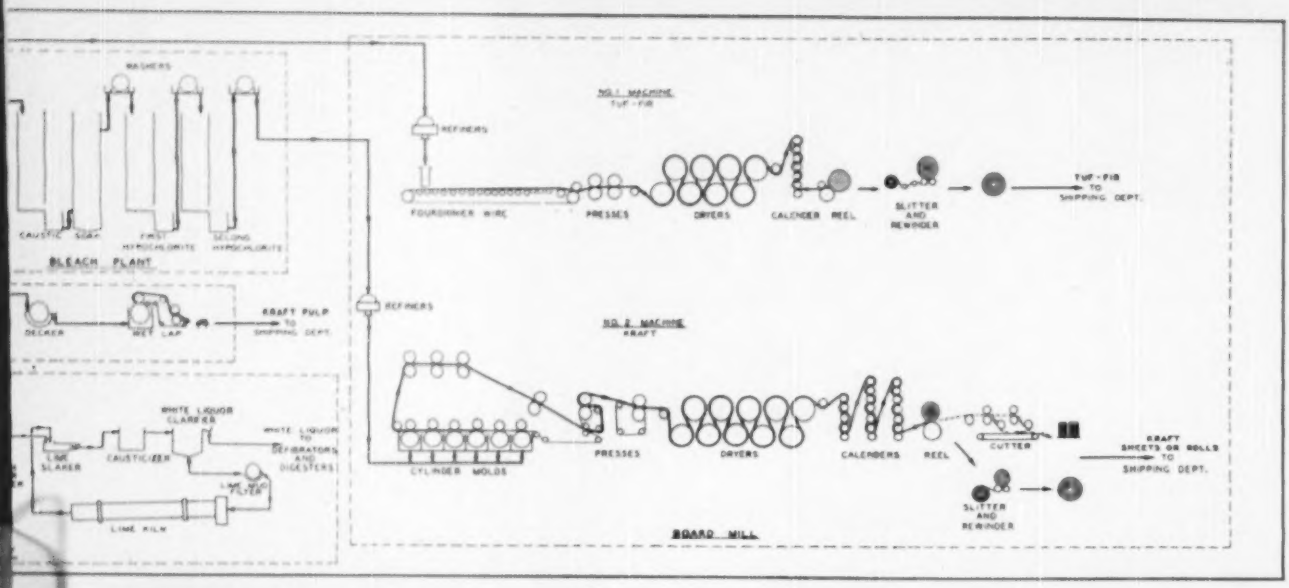
On No. 1 machine J. O. Ross Engineering Corp. supplied complete hood and exhaust system and a standard Ross-Grewin system. The machine calender is equipped with a standard Ross calender cooling system using air filters.

No. 2 machine, which is a Black-Clawson cylinder machine, also has a standard Ross hood and exhaust system, and Ross-Grewin system.

Hood exhaust fans on both machines are located on mezzanine floors in back of each machine with exhaust stacks going vertically up through the roof of the mezzanine.

For both machines Ross furnished all motor cooling ducts for furnishing air to externally ventilated variable speed drive motors. All air supplied to motors is filtered through multi-duty continuous automatic air filters.

A reasonable air balance for the mill, to replace the air exhausted from paper machine hoods, is obtained by supplying filtered air for heating and ventilating. Two large heating and ventilating supply units deliver air to the roof of the paper machine room and to mezzanine spaces in back of the machine. Four large Ross make-up air units are located in the basement, thence to rise up around machine



KEY PERSONNEL AT EAST ANTIOCH (l. to r.): C. H. DUNN, Board Mill Supt.; T. S. MARKOV, Chief Chemist; T. H. LINDLEY, Pulp Mill Supt.

driers. A separate heating and ventilating system delivers outside air, heated and filtered, to the stock preparation building. This air is also moving into the machine room.

All heating and ventilating systems have thermostatic control, roof systems being supplied with new, differential type of thermostatic control whereby the supply air temperature is controlled by outside air temperature. Air filters are of multi-duty, continuous oil type.

The bleach plant and brown stock washing plant have nine distinct Ross systems.

Bleached Kraft Pulp Mill

On No. 2, bleach kraft side, which produces board for food containers, a Link-Belt chip tripper discharges chips into a telescopic spout built by Fair Manufacturing Co., equipped with a device designed by Leland S. Rosener, consulting engineer on the job, which stops chips when digesters are full.

Positioning of the tripper, telescopic chip chute, and removal of digester head is largely mechanical, and the process is equipped with necessary electrical interlocks for protection.

The entire operation of loading digesters is performed from a single General Electric control station in the digester room. It is so arranged that practically no chips or sawdust escape into the digester room proper, thus eliminating dust nuisance.

There are three digesters, 3,800 cu. ft. capacity each, supplied by A. O. Smith Corp. and are stainless steel-lined. They are equipped with Yarway remote control valves, blow lines 12 in. diameter, which permit digesters to be blown in eight to nine minutes. These are probably the largest digester blow lines ever installed on kraft digesters.

Automatic cooking controls are by Brown Instrument Division, Minneapolis-Honeywell Regulator Co., who supplied most instrumentation in the mill. There are also a large number of Foxboro instruments and controllers throughout the plant, and in the power house is Bailey instrumentation.

Digesters are equipped with indirect cooking, using ESCO circulating systems with ESCO heaters and Bingham circulating pumps, furnished by the Electric Steel Foundry Co. of Portland, Ore.

The digesters blow into a conventional blow-tank, and flash steam from the blow-tank goes to a Foster-Wheeler heat recovery system, using a flash heat exchanger fitted with stainless steel tubes, which eliminates cleaning difficulties at this point.

Kraft stock is washed on a four-stage system consisting of four 8x12 Impco washers preceded by two Impco knot screens. Rejects from these screens go through a Rietz disintegrator supplied by Rietz Manufacturing Co., San Francisco, and are sent to the Tuf-Fir side for use in .009 manufacture.

Washed stock is then pumped to the screen room, where the equipment is 12 fourteen-plate Impco flat screens with Dunbar drive and bronze vats. These are arranged in six lines of two screens each, and with fifth and sixth lines as tailing

PROMINENT IN DEVELOPMENT AT EAST ANTIOCH (l. to r.): EINAR W. ERICKSON, who was Consultant during construction on loan from Crown Zellerbach, San Francisco; A. H. LINDQUIST, Plant Engineer of new division; R. C. GILFILLAN, Purchasing Agent.

screens—the fifth line being optional for either primary or tailing screen. Screens are made of stainless steel plate of sectional type, furnished by Magnus Metal Corp., Fitchburg, Mass.

Stock is deckered on an 8x12 Impco decker, with a portion going to a smaller decker, also by Impco. The stock from this latter decker is run over an Impco wet machine, laps from which will be used to supply unbleached kraft pulp to other Fibreboard plants.

The beach plant, as well as wash plant, was designed jointly by Improved Paper Machinery Co. and the L. S. Rosener firm. Impco supplied all equipment except for some Allis-Chalmers pumps.

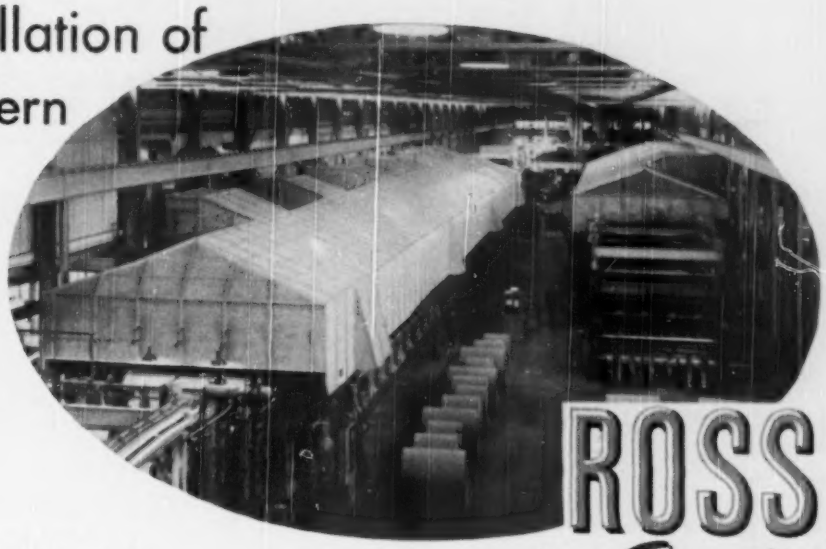
There are 67 Allis-Chalmers pumps throughout the mill, all of which when placed in immediate service were powered by Allis-Chalmers motors.

Piping is all corrosion-proof, it either being of stainless steel, or coated with vinyl or phenolic type coatings. The coated pipe was supplied by Chemical-Proof Construction Inc., Seattle, western associate of Gates Engineering Co.

Beside four Impco washers, there are five Impco stock mixers and agitators. Five towers, washer vats, and dump chests are of concrete lined with glazed tile,

at FIBREBOARD PRODUCTS

another notable installation of modern



ROSS

Air Systems

Left—Black-Clawson machine and right—Pusey & Jones machine at Fibreboard Products—both equipped with ROSS Hoods and ROSS-GREWIN Systems. Photo Courtesy Fibreboard Products, Inc.

Across the industry, from coast to coast, ROSS Air Systems play a major role in the operation of prominent mills. At Fibreboard Products, Inc., East Antioch, California, ROSS supplied the hoods for both machines and all black stock washers, Ross-Grewin Systems for both machines, the calender and motor cooling systems, complete heating and ventilating apparatus for both the stock preparation and machine room plus nine separate and distinct air systems for stock washing and bleach plant. We are justly proud of the extensive use of ROSS Air Systems in maintaining the high quality standard associated with Fibreboard Products.

ROSS SYSTEMS

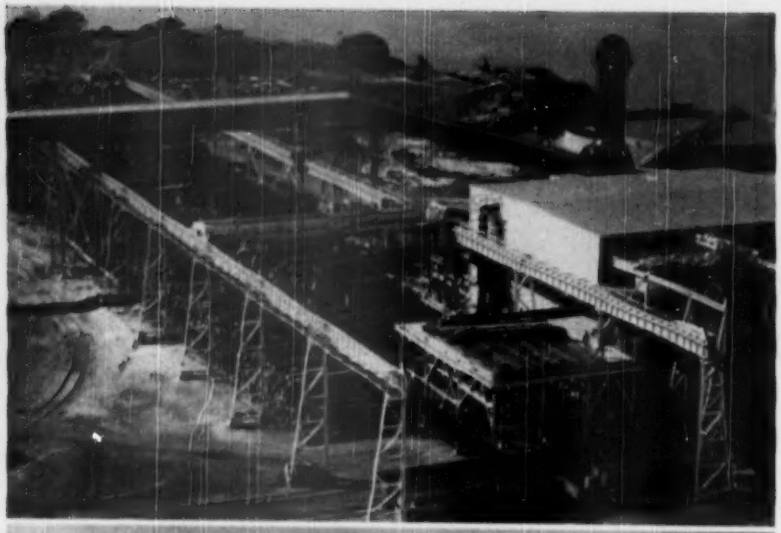
J. O. ROSS ENGINEERING CORPORATION

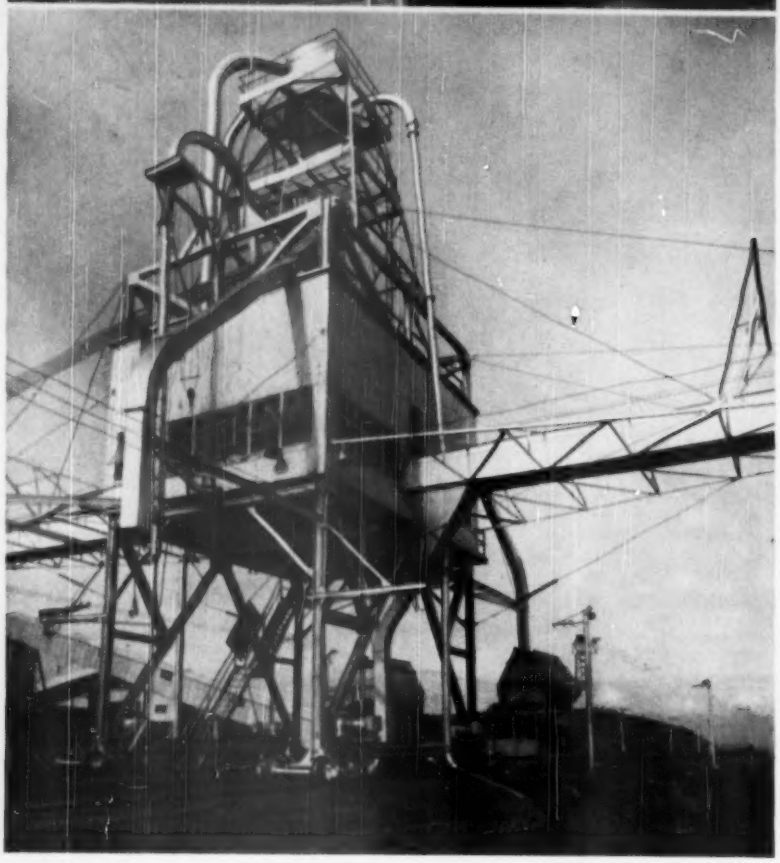
MANUFACTURERS OF AIR PROCESSING SYSTEMS

350 MADISON AVENUE NEW YORK 17, N. Y.

201 N. Wells Street, CHICAGO-6 • 79 Milk Street, BOSTON-9 • 9225 Grand River Avenue, DETROIT-4 • 600 St. Paul Avenue, LOS ANGELES-17

ROSS ENGINEERING OF CANADA, LIMITED, MONTREAL, CANADA • CARRIER-ROSS ENGINEERING COMPANY, LIMITED, LONDON, ENGLAND





SOMETHING NEW FOR THIS INDUSTRY is amazingly novel and ultra-modern machinery seen in wood yard of new Fibreboard mill. Top—Harnischfeger Corp.'s P & H 50-ton overhead crane with 100 ft. span efficiently loads logs in storage pile from cars or onto log deck of wood room, in foreground. Over top of wood room is Dorrco Clariflocculator for water treatment.

Besides logs for standard pulp mill, chips already produced in woods come into East Antioch for the Tuf-Flr side. Below—Here is gantry-type suction loader-unloader with Sutorbilt Pneumatic Conveying System which sucks up these chips from unique outdoor storage trenches. Note suction line to top, with Caterpillar D2 at lower right corner pushing chips to suction mouth. In background can be seen two parallel small electric cars. Chips are loaded into these cars. Cars run down track and dump chips into hopper that leads to conveyor to blending tanks, screen room and then storage silos.

tile work being done by Stebbins Engineering Corp., Seattle.

Stock enters through an Impco stock meter, equipped with DeZurik consistency regulator, of which there are a number in the plant. The first stage consists of a low-density chlorination tower; the second stage, high-density caustic extraction tower, followed without washing by a low-density soak tower. Third and fourth stages are high-density hypochlorite.

Kraft Board Mill

Pulp is then pumped via Allis-Chalmers stock pumps to the stock preparation room. Here pulp is put through four Sutherland refiners, powered by Westinghouse motors, which are arranged for flexibility in preparing liner and filler stock for the board machine. All stock chests in the mill are equipped with Impco agitators.

Stock, before going to the refiners, is passed through a DeZurik consistency regulator, as on the No. 1 side.

The rosin size for No. 2 machine is emulsified by means of an automatic process developed by Hercules Powder Co. This provides for heating and proportioning of the high solids paste rosin size as well as the hot and cold water necessary in preparing the dilute rosin size emulsion for addition to the boardmaking system. The 3-cylinder rosin-size pump was supplied by Milton Roy Co.

Fifteen General Electric speed variators provide flexible, adjustable speed drive for pulp processing washers and caustic tower.

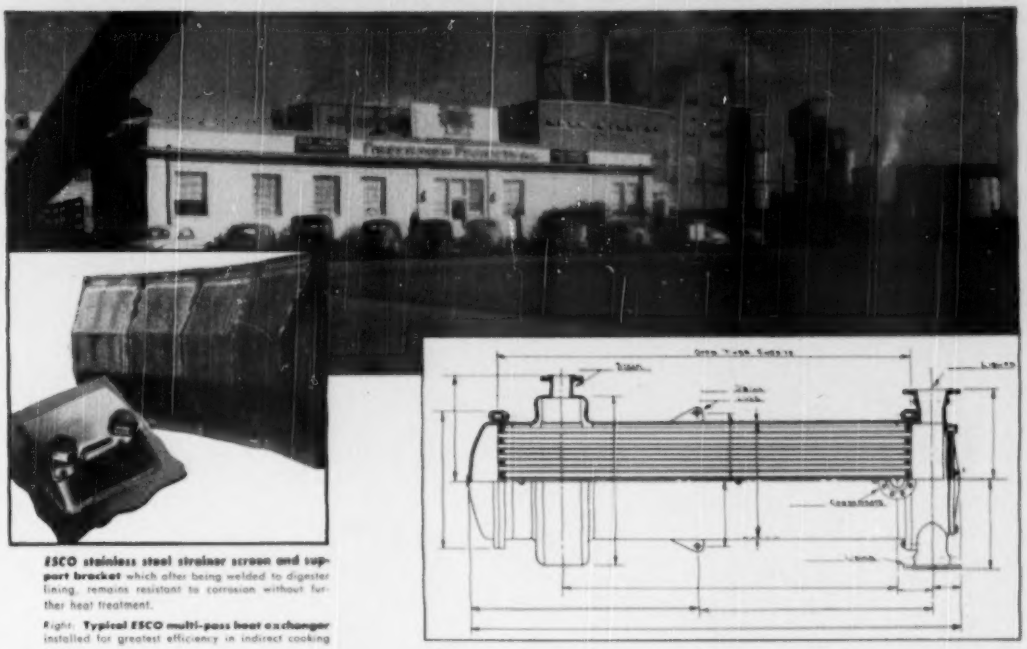
Machine No. 2 is a 10-section Black-Clawson cylinder type, of from 100 to 500 ft. per minute range, 136 in. width, with the same General Electric multiple generator type drive as for Machine No. 1, the Pusey & Jones. Total connected horsepower is 555.

The Black-Clawson machine is equipped with overflow type stainless steel vats equipped with automatic level control and has Black-Clawson Hydronamic inlets with Shartle pumps handling the flow. On the Black-Clawson machine, Nash Engineering Co. also supplied an H-9 Nash pump for the suction drum roll complete with separating tank and centrifugal pump; an L-7 Nash pump for suction press, a K-7 pump for felt roll, and a K-4 pump for the felt conditioners. The board machine has Black-Clawson automatic level control, Black-Clawson—Shartle Bros. selectifier screens being on each vat. The machine headbox is stainless steel built by Shartle Bros.

Again all piping is protected against corrosion by the Gaco vinyl or stalpic process, supplied by Chemical-Proof Construction, or it is of stainless steel. A great portion of the stainless steel piping in the plant was provided by Electric

(Continued on Page 54)

At FIBREBOARD...Corrosion is out!



***ESCO* stainless steel strainer screen and support bracket** which after being welded to digester lining, remains resistant to corrosion without further heat treatment.

Right: **Typical *ESCO* multi-pass heat exchanger** installed for greatest efficiency in indirect cooking process.

HOW NEW ANTIOCH, CALIFORNIA PLANT STOPPED CORROSION BEFORE IT GOT STARTED...

CORROSION will never be a serious problem in the digester circulating systems of the new Antioch, California plant of Fibreboard Products, Inc. For the individual parts of this system are cast of *ESCO* stainless steel. They will resist corrosion, minimize maintenance expense, reduce shutdowns and increase production.

Component parts which make up the circulating systems at this new mill are *ESCO* digester strainer screens and support lugs, piping, fittings, valves and heat exchangers for indirect cooking.

The catalog, *"ESCO* Stainless and High Alloy Steels in Process Equipment" explains our stainless service and facilities, and shows various items of corrosion resisting equipment used by many of the nation's finest pulp mills. A copy of this catalog is yours for the asking. See the *ESCO* office nearest you, or fill in and mail the coupon.

ESCO STAINLESS AND HIGH ALLOY STEELS

ELECTRIC STEEL FOUNDRY

2166 N. W. 25th Avenue, Portland 10, Oregon

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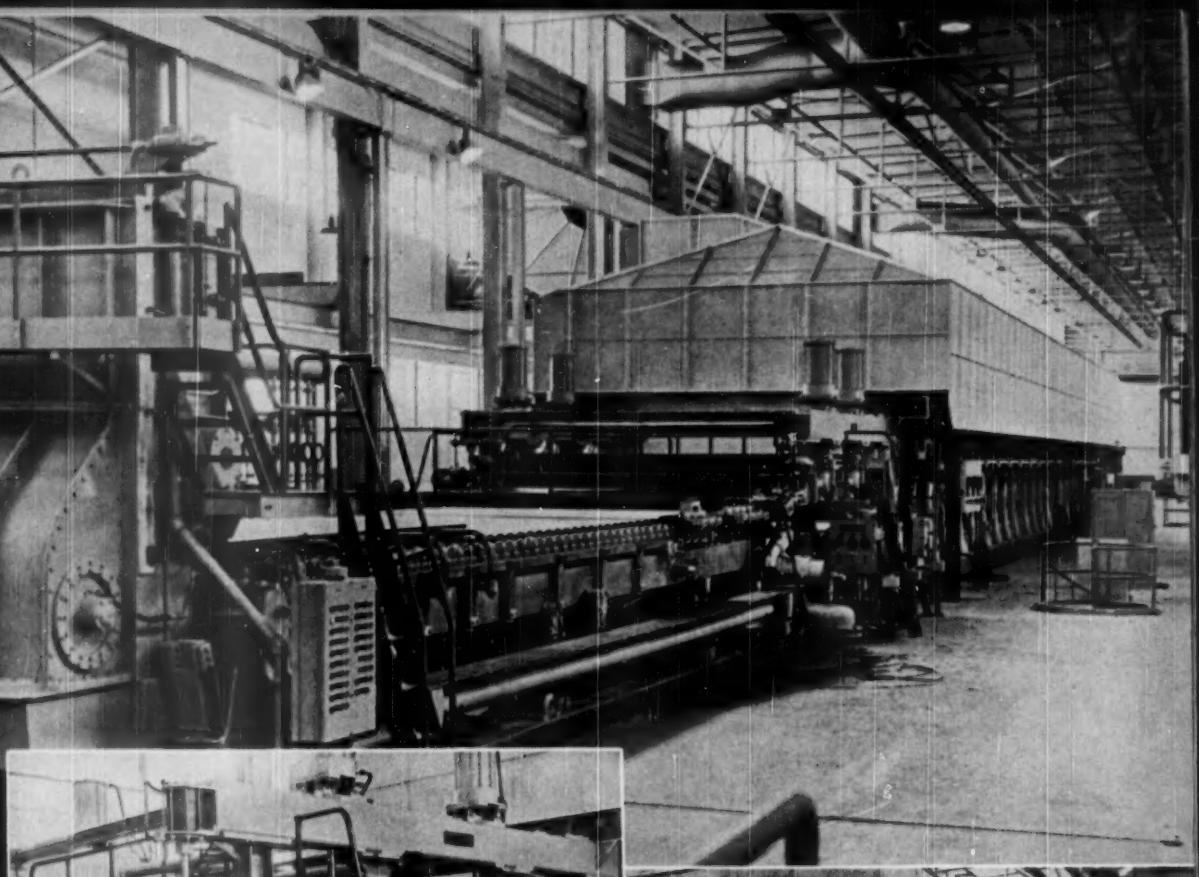
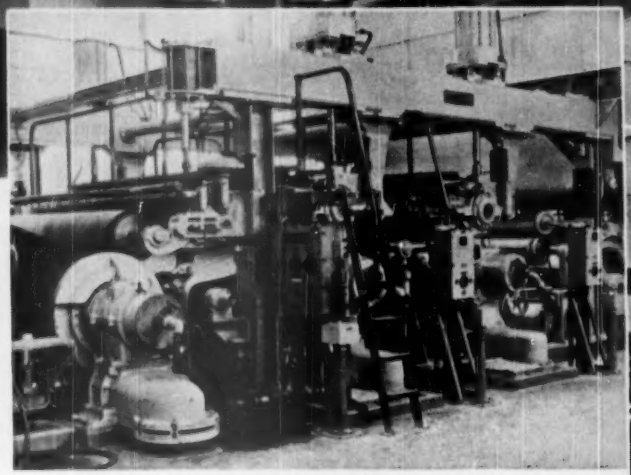
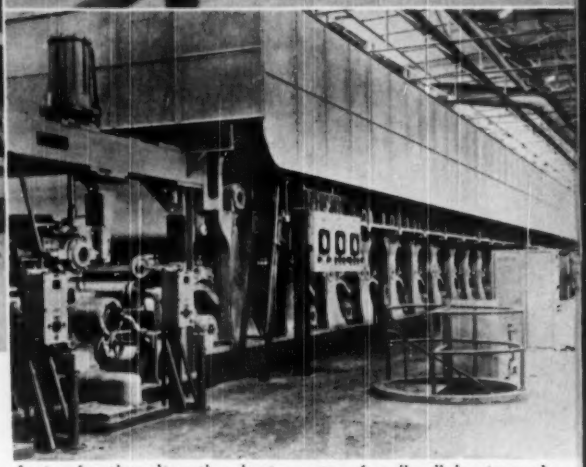






FEATURES OF 156" PUSEYJONES FOURDRINIER MACHINE AT FIBREBOARD

Improved type Flow Spreader combined with 8 ft. high head adjustable slice, all Neoprene lined.

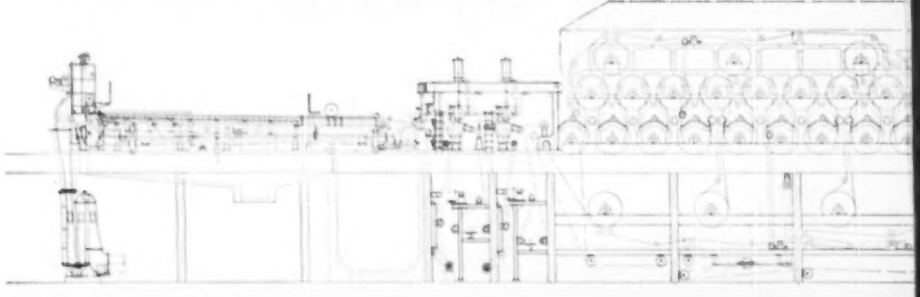
Fourdrinier Part suitable for a wire 100 ft. long and 156" wide, equipped with 36" suction couch, hump breaker roll with improved raising and lowering mechanism, 7–7" wide suction boxes, dandy roll, "Rapi-drape" wire changing device, and adjustable wire pitch arrangement.

Press Part of Simplex close-coupled design with 28" rubber covered first and second main presses and Vickery felt conditioners.

Dry Part in two main sections having one upper and lower felt on each section; first section comprises 20–60" paper and 6–60" felt dryers; second section comprises 20–60" paper and 2–60" felt dryers; Bowser lubricating system and main dryer bearings; rope carrier device for threading the sheet through the dryer sections; improved type enclosed gearing, latest type steam joints with dual revolving siphons, and automatic motor-operated felt tension control devices. Calender Stack comprising 7 rolls with independent Bowser oiling system for all roll bearings; also pneumatic nip loading system.

Pope type Uniform Speed Reel of improved design, with pneumatic adjustable loading mechanism.

Puseyjones Winder with hydraulic operated roll unloading mechanism.



Line drawing of new machine. Maximum speed is 1200 feet per minute with G.E. multiple generator type sectional electric drive.

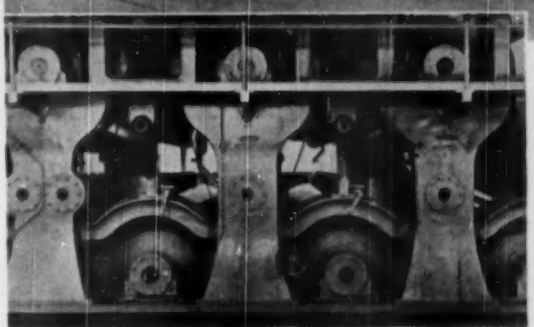
ANOTHER FIRST FOR FIBREBOARD

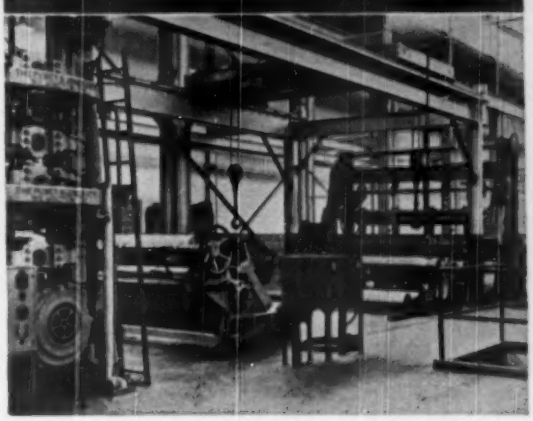
Here is the Puseyjones Fourdrinier Machine now in operation in the fine new mill of Fibreboard Products, Inc., East Antioch, California. In every detail from wet end to winder, the new machine reflects the latest developments in the papermaking art. It is producing .009 corrugating paper from furnish prepared by the latest semi-chemical process.

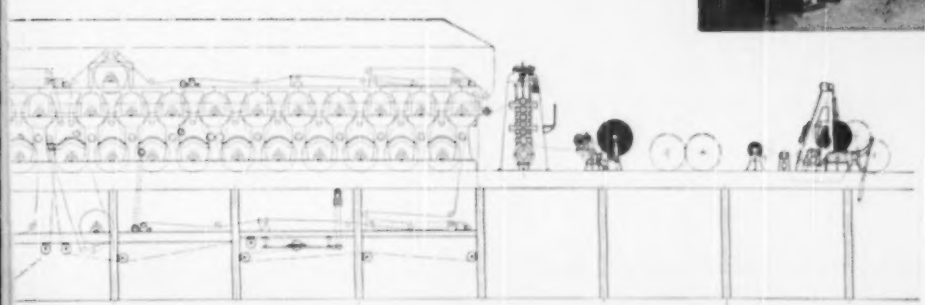
Whatever your papermaking problem, put it up to Puseyjones—for machines that give continuous, uniform production at high speeds.

THE PUSEY AND JONES CORPORATION
Established 1848. Builders of Paper-Making Machinery
Wilmington 99, Delaware, U.S.A.

THE SIGN OF TRADE MARK SUPERIOR QUALITY

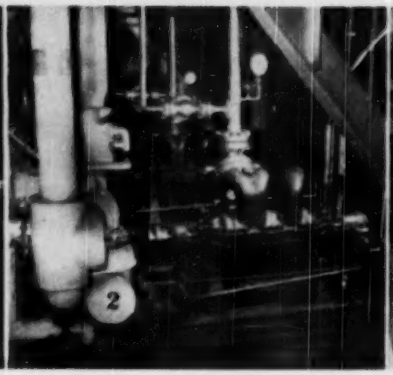






All rolls in the new Puseyjones Fourdrinier Machine at Fibreboard are equipped throughout with roller bearings, with the exception of lower calender roll.

1. LOOKING THROUGH OPERATOR'S GLASS at log being hydraulically barked in Sumner Iron Works' "Bellingham-type" machine which turns logs on cradle of toothed rolls.



2. HERE'S TWO BYRON JACKSON 600 gpm, 1,200 psi. water pumps for Sumner hydraulic barker at Fibreboard mill. Powered by GE steam turbines.

3. GENERAL VIEW OF DORR CAUSTICIZING PLANT at East Antioch. On right is Allis-Chalmers lime kiln.

(Continued from Page 50)

Steel Foundry Co., Portland, Ore., and by Chemical-Proof Construction, Inc.

The machine is equipped with a Beloit Iron Works suction drum roll, two primary presses, one plain main press, one Beloit suction reversing press, and a third, main press. There is a Downingtown Manufacturing Co. suction felt roll. Calender rolls were built by Farrell-Birmingham.

The machine has three drier sections and three calender stacks, equipped for water finishing. It is equipped with Pope reel, a Duplex cutter for making sheets and Cameron instant-change board slitter. The presses are equipped with Foxboro pneumatic loading controls.

The Black-Clawson machine is completely equipped with Johnson rotary pressure joints, manufactured by the Johnson Corp., Three Rivers, Wis. Johnson Rotary Pressure Joints are used to admit steam under pressure into board machines with rotating rolls and drums.

The winder was furnished by Samuel Langston Co., Camden, N. J., and is one of their new Model DA 120 in. machines. When designing this slitter and winder Langston engineers gave careful consideration to many points of design and construction. Of primary importance was adoption of completely enclosed gear drives for the main drive, and the pressure roll drive, which consist of "nitrided" helical gears running in oil. Appearance has been considered by the use of box-section frames and castings, which contribute to ruggedness of construction.

Langston's well known principle of "Shear-Cut" has been further improved by use of a newly designed frictionally driven front slitter operating in conjunction with a power-driven rear slitter, which results in clean-cut, dust-free rolls.

Chemicals and Water

The chemical handling system is most modern and up-to-date. Dry chemicals, such as salt cake, soda ash, and lime are unloaded by Fuller Airveyors into steel storage tanks. From this point a Merrick Feedoweight not only weighs salt cake, but accurately feeds it to the mixing tank at a pre-determined rate.

Caustic soda is received in liquid form, as is alum, and comes in tank cars or tank trucks. Two alum tanks with GACO neoprene linings of 12,000 and 8,000 gals. capacity were supplied by Chemical Proof Construction, Inc. Among those supplying chemicals are Dow Chemical Co., caustic and chlorine; American Potash & Chemical Co., salt cake and soda ash; U. S. Lime Products, lime; General Chemical Co., alum and acids; Hercules Powder Co., rosin size; and Philadelphia Quartz Co., sodium silicate.

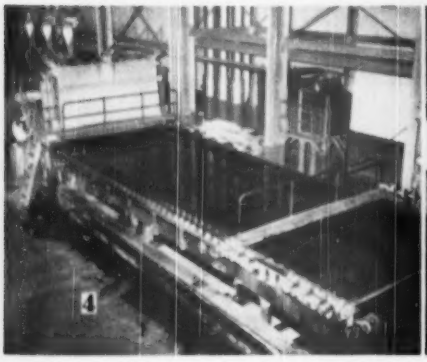
Some 14,000,000 gallons of water are used daily in the mill, the water coming from the San Joaquin River. At the river bank is a large and spacious pump building.

There are five raw water 12 in. DeLaval pumps, powered by GE motors, two being 60 hp. and three being 100 hp.; five Fairbanks-Morse effluent pumps, 8 in. and powered with Fairbanks-Morse motors; two Milton Roy chemical proportioning pumps for mill water supply treatment, powered with three hp. GE electronic variable speed drives that, under the control of flow meters, automatically turn at the proper speed to inject the right amount of chemical for whatever flow may be taking place. There are also three Fairbanks-Morse fire pumps, powered with Fairbanks-Morse motors; and DeLaval condenser pumps, powered with GE motors.

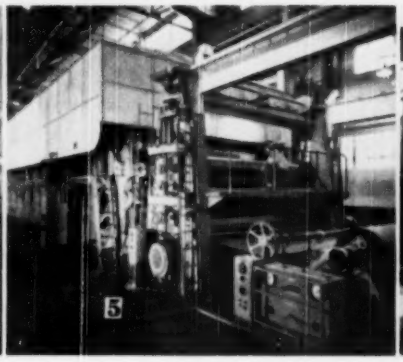
Power supply for the pump room is

(Continued on Page 58)

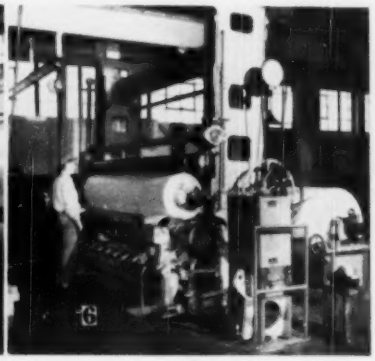
4. WET END OF NEW PUSEY & JONES Fourdrinier machine at the Fibreboard mill in East Antioch.



5. DRY END OF PUSEY & JONES MACHINE showing Masoneilan Exactaload control at right foreground.



6. SAMUEL M. LANGSTON CO. rewinder on Black-Clawson cylinder machine which appears in another picture.



NEW FIBERBOARD MACHINE
BY BLACK-CLAWSON

One of the "youngest" members of the Black-Clawson family of distinguished paper machines is that of Fiberboard Products, Inc., San Joaquin Division.

Several ultra-modern features include superimposed primary presses and B-C HYDRONAMIC Inlets on all six vats.

Machine width 136"—trim 122".

Ultimate speed 500 feet per minute.

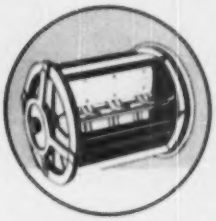
If anywhere near San Joaquin this summer, pay Fiberboard a visit. *See this new machine in operation.*

THE BLACK-CLAWSON CO., HAMILTON, OHIO

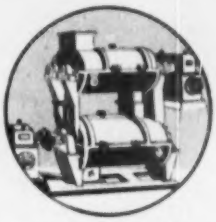
Divisions: SHARTLE BROS. MACHINE CO., Middletown, Ohio
DILTS MACHINE WORKS, Fulton, New York
Western Sales Office: Mayer Bldg., Portland, Oregon
Associate: Alexander Fleck Limited, Ottawa, Canada
Subsidiary: B-C INTERNATIONAL, LTD., 16 Catherine Place, Victoria, London S.W.1, England

Salute! to

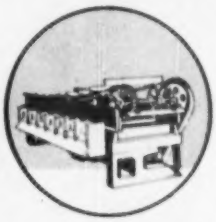
VIBRATORY KNOTTER



STOCK METER

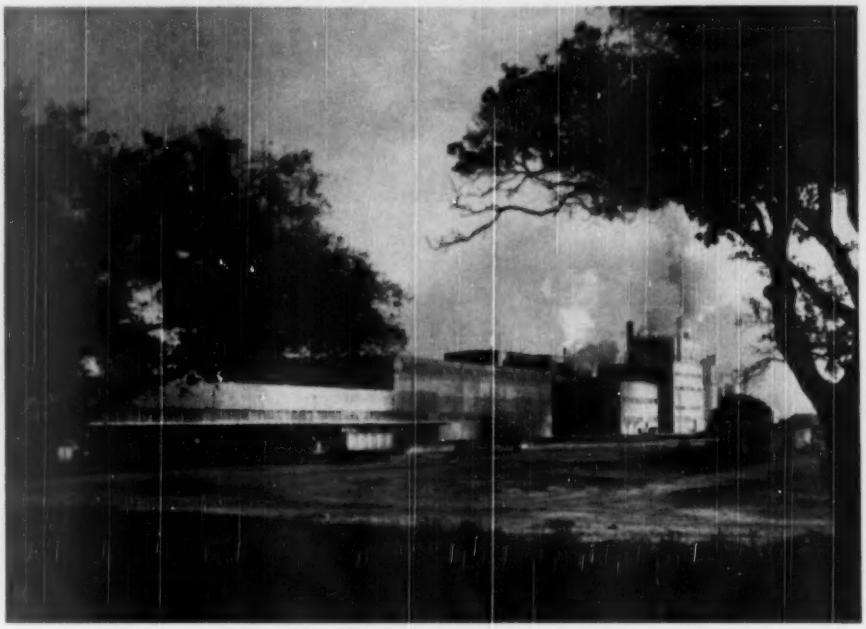


DOUBLE MIXER



FLAT SCREEN

AGITATOR



Yes, Salute to Fibreboard Products Inc., for their ultra-modern San Joaquin Division plant located in East Antioch on the sunny California shores of the San Joaquin River.

As makers of high grade bleached and unbleached board, Fibreboard Products Inc., has equipped this new mill for outstanding production. The pulp and board mill machinery is all of the newest dependable design to insure years of continued low maintenance cost operation at maximum capacities.

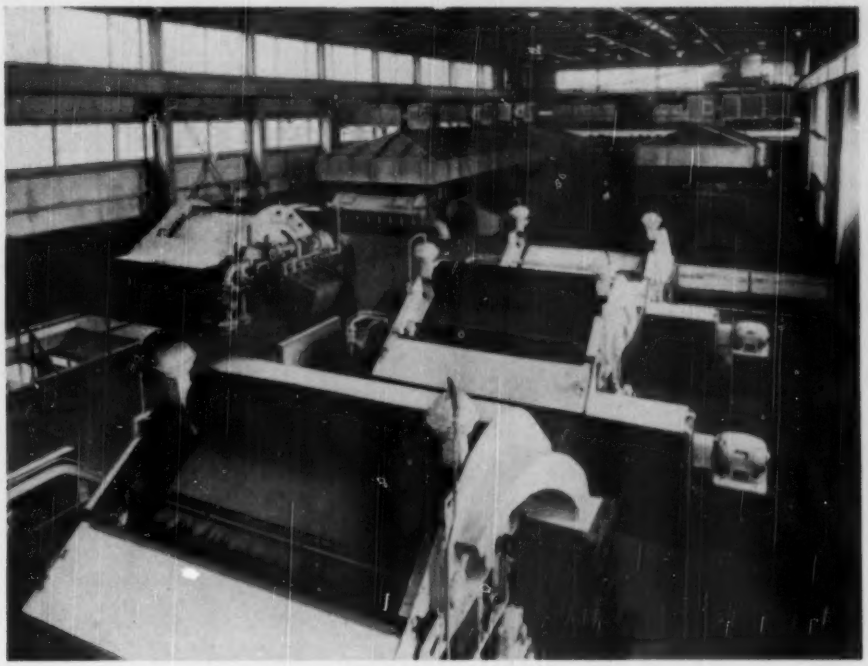
IMPCO appreciates the opportunity of furnishing counter-current pulp washing systems for Kraft and "Tuf-Fir", Dunbar drive bronze vat Flat Screens with both Open Cylinder and Vacuum Deckers for the screen room, the various equipment for the 5-stage continuous Kraft Bleach Plant, as well as the Wet Machine and pulp agitation equipment.

IMPROVED PAPER

NASHUA,

IMPCO

FIBREBOARD PRODUCTS INC.



The above picture shows the spacious well-lighted and well ventilated brown stock wash room in the background with the 4-stage IMPCO Kraft Washers on the left, and the 2-stage IMPCO "Tuf-Fir" Washers on the right. In the foreground are four IMPCO tile vat Bleach Plant Washers, arranged for compactness and ease of operation.

If you are considering a single pulp machine, or a complete revision of a department, or a whole pulp mill, we solicit your inquiries. We manufacture virtually every type of pulp-producing equipment with new items under development.

WASHER

BLEACH PLANT

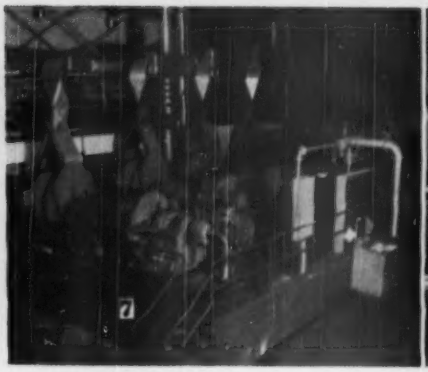
SAVEALL

FOAM BREAKER

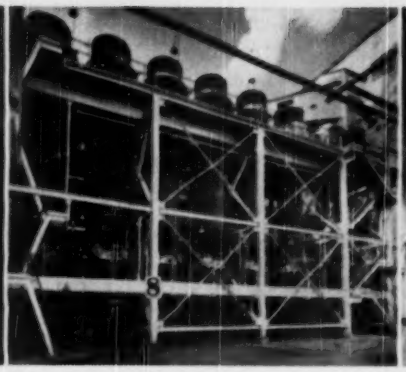
CHLORINE MIXER

MACHINERY CORPORATION

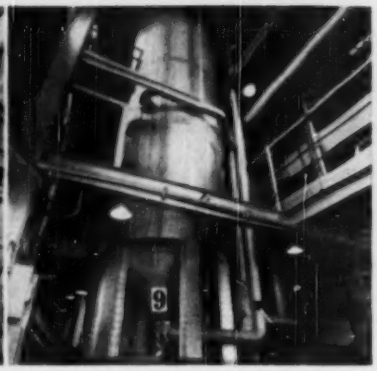
NEW HAMPSHIRE, U.S.A.



7. SUTHERLAND REFINERS AT FIBREBOARD mill serve the Black-Clawson cylinder kraft machine.



8. GOSLIN BIRMINGHAM sextuple effect long tube black liquor evaporators are important units in recovery.



9. A. O. SMITH Corp. stainless steel lined 3,800 cu. ft. digester with ESCO stainless steel heater (right center), Bingham circulating pump, extra large blow line.

(Continued from Page 54)

controlled through a large Cutler-Hammer instrument panel which also has a Foxboro Rotax Liquid Level controller.

An interesting feature of the pump house is a stand-by Waukesha gas engine connected to a DeLaval pump. Exide batteries are provided for starting the engine in an emergency. Many Crane valves are used in the pump house.

The five DeLaval raw water pumps pass water from the river through a fore-bay equipped with a Link-Belt traveling screen. Pumps are so arranged that they stop and start automatically, their action being controlled by a depth gauge on the Dorrco Clarifloculator, installed by the Dorr Co.

The Dorrco Clarifloculator is 150 ft. diameter and has capacity of 600,000 gallons. Before entering the Clarifloculator, raw water is treated with Bayliss-Sol, this treatment being fully automatic, depending upon rate of flow.

In addition to the regular fire-fighting water supply, which takes its water directly from the river, by-passing the Clarifloculator entirely, the fire-fighting system can be augmented in extreme emergencies by drawing water from the storage reservoir surrounding the Clarifloculator by means of an extra steam turbine pump. Controls for this pump are so designed that it is cut into service automatically in event pressure in the regular fire-fighting system drops below safety.

From the Clarifloculator, water goes to the mill pump room, which is equipped with four DeLaval mill supply pumps, 10 in. diameter and powered with 100 hp. GE motors; three shower pumps made by DeLaval and powered with 75 hp. Reliance motors; three condenser pumps, 12 in. diameter, made by DeLaval, two powered with 50 hp. Reliance motors and one with a GE steam turbine. There is also a Fairbanks-Morse fire pump driven by a GE steam turbine. In this pump room are a number of Chapman valves, and there is a Ross heat exchanger.

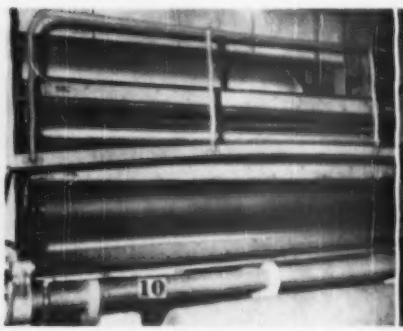
Three of the Ingersoll Rand compressors driven by GE motors are in this room also.

Water is pumped through the power house condensors, which discharge into a line returning to the Dorrco Clarifloculator reservoir. The mill service pumps take water off this return line.

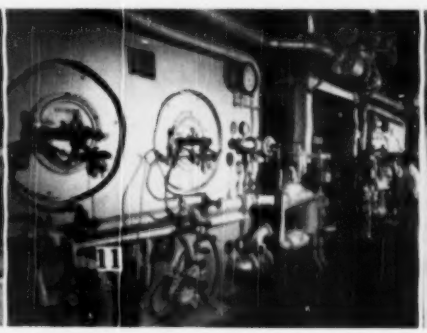
In the chemical recovery system of the San Joaquin Division, black liquor from the washers is pumped to a Goslin-Birmingham six-body sextuple effect evaporator of the long-tube, vertical film type, where it is concentrated to high density liquor and goes through LaBour black liquor evaporator pumps. It is then sent to a Babcock & Wilcox recovery furnace and boiler, supplied and installed by C. C. Moore & Co., Engineers. The recovery unit has a capacity equivalent to 225 tons per day of pulp mill capacity, and will generate 100,000 lbs. of steam per hour, and upwards, at 600 p.s.i.g. and 700° F., when fired with black liquor of varying concentrations and without need of auxiliary fuels to sustain combustion.

The B&W-Tomlinson recovery unit consists of a cyclonic evaporator, water-cooled furnace, boiler, superheater, economizer, tubular type air heater, and green liquor storage tank, as well as the various auxiliaries required to handle black liquor and salt cake in the recovery room.

The system of handling the recovered salt cake from the recovery unit and Cottrell precipitator was designed to insure maximum cleanliness in the recovery room, and to require a minimum of attention and time in operation. Salt cake dropping out of the flue gases in the boiler and air heater hoppers are continuously collected dry in a screw conveying sys-

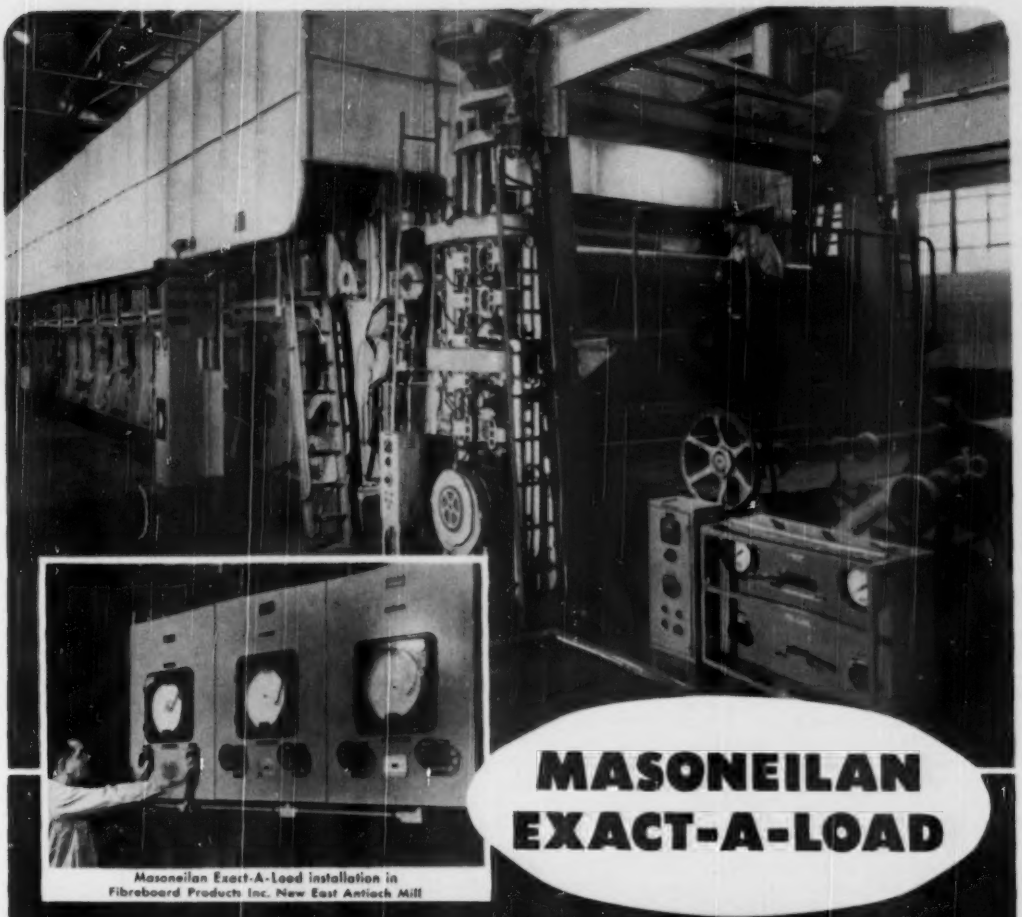


10. BIRD MACHINE CO. Vickery doctor shown on PUSEY & JONES machine at Fibreboard's new mill.



11. BABCOCK & WILCOX MAIN BOILERS at Fibreboard mill, supplied and installed by C. C. MOORE & CO., Engineers. Capable of generating 160,000 lbs. steam per hr. 600 lbs. pressure.

12. JOHNSON CORP. rotary steam pressure joints on BLACK-CLAWSON cylinder machine at Fibreboard mill, typical of many in mill.



Masoneilan Exact-A-Load installation in Fibreboard Products Inc. New East Antioch Mill

MASONEILAN EXACT-A-LOAD

USED ON PAPER MACHINE PRESSES
In Fibreboard Products Inc. New East Antioch Mill

The new Fibreboard Products Inc., bleached kraft and nine point mill embodies many new features in paper mill operations.

To assure accurate control and maintain rigid quality, Fibreboard Products Inc., relies on Masoneilan Exact-A-Load Control for the various paper machine presses.

Experience proves that Exact-A-Load provides close control of loading on all kinds of rolls, maintaining the load within narrow limits, regardless of variations in the sheet or rolls out-of-round. It assures product uniformity and fewer rejects.

If you are planning a new mill, plant expansion or modernization, it will pay you to investigate and use Masoneilan Specialized Paper Mill Control Equipment.

MASONEILAN

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Sales Offices or Distributors in the Following Cities: New York • Syracuse • Chicago • St. Louis • Tulsa • Philadelphia • Houston Pittsburgh • Atlanta • Cleveland • Denver • Cincinnati • Detroit • San Francisco • Salt Lake City • El Paso • Boise • Albuquerque Charlotte, N. C. • Los Angeles *Mason-Neilan Regulator Co., Ltd., Montreal and Toronto*

tem and returned to the recovery system by mixing with the black liquor prior to flowing to the burner. Salt cake recovered from the end gases by the Cottrell precipitator are picked up in a mixing tank, located below the precipitator, by the black liquor which flows from the cyclonic evaporator to a second mixing tank, and then to the burner.

The recovery unit is equipped with an automatic-sequentially operated soot blowing system as manufactured by the Diamond Power Specialty Corp., and furnished and installed by C. C. Moore & Co. Engineers. The system includes long retracting blowers in the superheater and boiler section, rotating air-blowing units in the economizer section, and straight line units in the air heater. With this system of soot blowers, the recovery unit is kept clean and free from fouling with little or no hand lancing required.

Flue gases go through an electrostatic Cottrell precipitator furnished and installed by the Research Corp. This precipitator removes all chemical fumes from the flue gas.

Green liquor from the recovery furnace goes to a Dorrco Slaker in the continuous recausticizing system, supplied by Dorr Co., where reburned and new lime are slaked.

Following the slaker, the causticizing plant includes three mechanically agitated causticizers, one green liquor clarifier, a dregs washer, one white liquor clarifier, and one white mud washing clarifier.

Instruments throughout the causticizing plant were supplied by Foxboro. Pumps in the recausticizing and recovery system were supplied by Worthington Pump & Machinery Co.

The lime mud is filtered on a Swenson filter furnished by Swenson Evaporator Co., and then sent to an Allis-Chalmers lime kiln, which is 250 ft. long by 8 ft. diameter at the firing end, and 7 ft. diameter at the feed end.

The kiln is equipped with an Allis-Chalmers chain section in the feed end. Either natural gas or fuel oil can be used to fire the kiln. It is so arranged that a rapid change-over from one type of fuel to the other can be made. The kiln is equipped with fully automatic combustion control.

Contaminated condensate from black liquor evaporators is used as wash water in the causticizing system, this wash water being clean and pure.

All mill sewers except storm sewers are connected to a surge tank near the pump house, from whence mill effluent is pumped across a branch of the San Joaquin River over a small island, West Island, and later submerged in the main channel of the river.

Elaborate precautions are taken to chemically neutralize effluent, so that it is harmless to aquatic life and will not pollute the river.

Any acids within the system are automatically neutralized with Beckman controllers, which control the addition of neutralizing agents.

Power Plant

The power plant is equipped with two Babcock & Wilcox two-drum integral furnace boilers with tubular air heaters, supplied and installed by C. C. Moore & Co., Engineers, San Francisco. Each is capable of generating 160,000 lbs. of steam per hour at 600 p.s.i.g. at 750° F, when fired with either natural gas or fuel oil.

Power house instrumentation is by Bailey Meter Co. All boilers are fitted with diamond Air Puff soot blowers.

Air compressors used for the air puff blowers are Ingersoll-Rand, as is the air compressor for the board machine and press cylinders.

The B&W boilers provide steam for the General Electric 5,000 kva turbine generators, which supply power for the entire mill. The power distribution system incorporates the unit substation typical of which are eight 500 kva, 4160/480 volt units.

Much electrical equipment was supplied by Westinghouse Electric & Manufacturing Co. which, beside the motors mentioned, installed four 25 kw. exciter motor generator sets, and exciter control board; 15 units of 4,160 volt metal-clad switch gear; one 1,500 kva power center transformer (Inerteen immersed); 600-volt metal-enclosed switch gear with 12 DK25 breakers and three DA75 breakers; and one 750 kva oil-insulated power center transformer.

General Data—Finishing

The nine-point Tuf-Fir rolls are banded on each end with Acme Steel strap and are transported on Yale & Towne lift trucks to the shipping department.

Sheets of bleached kraft are placed on pallets, wrapped and Acme Steel-strapped. Kraft board in rolls is either banded or completely wrapped, depending upon the stock.

The San Joaquin Division mill was planned and constructed under direction of N. M. Brisbois, vice president of Fibreboard Products Inc., and Leland S. Rosener, consulting engineer, San Francisco. Swinerton & Walberg Co., San Francisco, were general contractors.

The main building is 1,000 ft. long and 200 ft. wide. It is built of structural steel and reinforced concrete. The building was designed to house equipment operating 24 hours per day. This main building is equipped with three P&H overhead traveling cranes—one in the bleach plant, one in the machine room, and one in the roll pit.

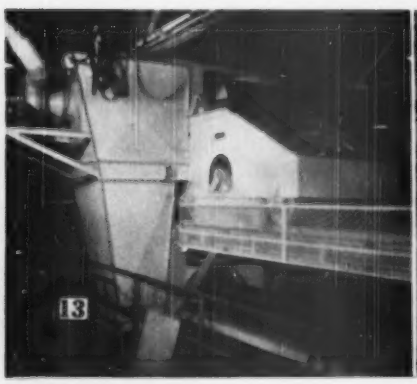
The main plant is composed of six different buildings, all integrated. There is the machine room, housing board machines. This building is equipped with a large freight elevator.

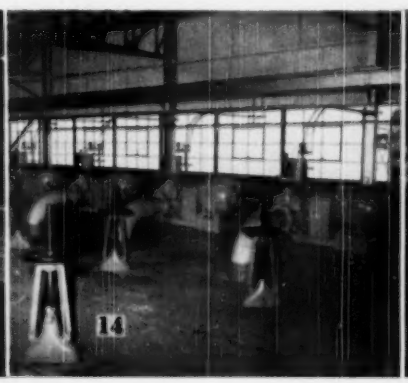
Then, there is the roll storage building where bulk rolls are stored; finishing and shipping building; stock preparation building in which final preparation of pulp manufacturing is carried out; power house, containing boilers and generators; switch building, recovery plant, pulp mill and bleach plant. The pulp mill is equipped with Man Lift elevator. Fibreboard management explains that experience has shown that this type of elevator saves a tremendous amount of time as

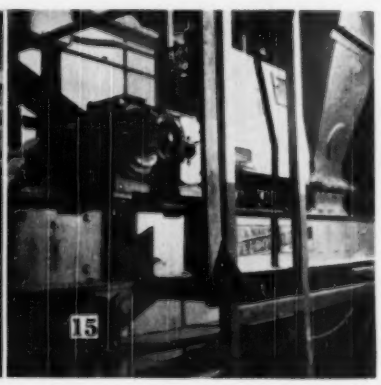
13. LINK-BELT CHIP TRIPPER feeds chips to A. O. Smith digesters in the standard kraft pulp mill side at East Antioch.

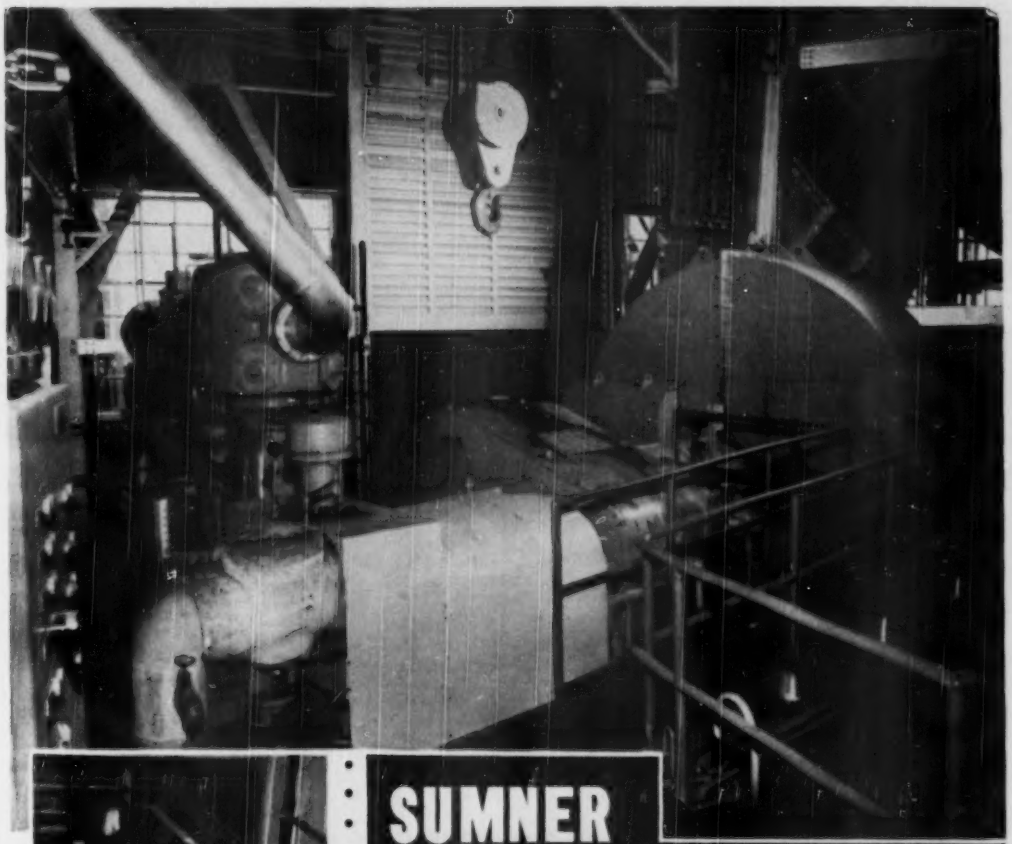
14. PUMP ROOM AT FIBREBOARD MILL. Piping fabricated by Chemical Proof Construction Inc., Seattle. DeLaval supplied pumps. Crane valves are shown of which there are many in mill.

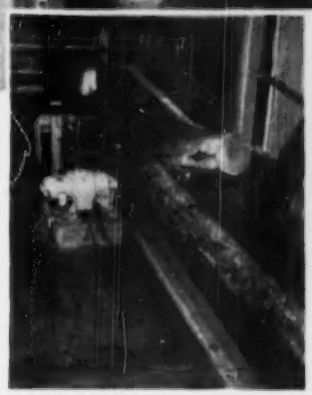
15. MERRICK SCALE MFG. CO. Feed-O-Weight weighing device for salt cake received at Fibreboard mill.











SUMNER SETS THE PACE

AT FIBREBOARD'S NEW SAN JOAQUIN PLANT

We salute FIBREBOARD INC. on the completion of their new San Joaquin division plant at Antioch, California. We of SUMNER are proud to have contributed chipping, barking and ALL deck transmission equipment to this latest wood utilization program on the Pacific Coast.

SUMNER equipment at this newly-operating plant includes the log chute shown at the left, and the 175" CHIPPER illustrated above. This is thought to be the first application where a chipper is direct connected to a steam turbine.

From the SUMNER 96" log deck cut-off saw, which bucks the incoming logs to the proper length, to the uniform size pulp chips passed through the SUMNER chip screens enroute to the chip silos, each succeeding operation is performed by SUMNER-built equipment exclusively.

This is but another part the SUMNER IRON WORKS plays in new and modern wood rooms of the Pacific Coast of the United States and Canada.

Detailed information on all SUMNER equipment will be gladly sent on request.

SUMNER INSTALLATIONS AT SAN JOAQUIN:

175" 4-Knife Round Log Chipper
84" 6-Knife Chipper
Special Chipper Feeding Devices
Bellingham Type Round Log Barker
Chip Shaker Screens
Chip Feeders
Motor Driven Drag Saw
96" Log Deck Cut-off Saw
Log Dogging Jaws
No-Man Log Carriage
Carriage Buffers
Shot-gun Carriage Feed
Log Loaders, Nigger, Turner, Kickers, Transfers, Rolls, Conveyors — and ALL other deck Transmission equipment.

SUMNER IRON WORKS Since 1891
EVERETT, WASHINGTON

In Canada: CANADIAN SUMNER IRON WORKS LTD., VANCOUVER, B. C.
EXPORT DEPARTMENT: PRAEGER & HANSEN LTD.
301 Clay Street, San Francisco 11, California, U. S. A.

SAN JOAQUIN DIVISION OFFICIALS INCLUDE (top row, l. to r.): S. J. BALOG, Supt. of Planning Dept.; W. W. BURKE, Office Manager; O. B. McCUISH, Personnel Manager. (Lower row, l. to r.): L. A. LANCE, Chief Electrician; C. F. MUNT, Master Mechanic; C. L. MOREY, Wood Mill and Yard Supt.

compared to the conventional freight and passenger elevator.

Outside buildings are the woodmill, 200x150 ft., also built of structural steel and reinforced concrete; causticizing plant; Clarifloculator; and office building.

Buildings are illuminated with mercury vapor and fluorescent lighting.

An interesting construction was the Dorrco Clarifloculator. This was built by Swinerton & Walberg Co. of prefabricated panels in each section, and each section, at the joint where it meets the next section, has a copper seal to keep it watertight.

Stock chests are all built out of reinforced concrete with baffles, and are sectionized. They were formed with plywood to give a smooth surface to aid in free flow of pulp.

Swinerton & Walberg Co. also did all the millwright work, setting the machinery, etc.

The electrical installation and connection of the electrical system throughout were performed as a joint venture by Fischbach & Moore of Calif., Inc., with Pacific Electrical & Mechanical Co.

There is a completely equipped machine shop with three lathes, and two shapers, a boring mill, and a radial drill. Next to the machine shop is the Lobdell roll grinder.

Piping insulation, and corrugated asbestos siding was provided by Plant Asbestos Co., San Francisco; and The Paraffine Companies, San Francisco, provided paint and roofing materials.

There is a 100,000-gal. elevated sprinkler tank for the fire protection system provided by the Chicago Bridge & Iron Co. The plant is covered with a Viking sprinkler system.

The testing laboratory has two main divisions—analytical and pulp testing. Then there are the board testing and bacteriological testing department.

Key Personnel

Heading the roster of key personnel at San Joaquin Division is C. R. P. "Dick" Cash, resident division manager. Mr. Cash received his technical training at Tri-State College, Ind. In 1926 he moved west to the kraft pulp mill at Tacoma, Wash., and later he went to the mill at St. Helens, Ore. He bears the distinction of being the first chairman of the Pacific Coast Division of TAPPI. In 1935 he returned east to the Champion Paper & Fibre Co., Canton, N. C., and was assistant superintendent of kraft and soda mills; where he spent 10 years. From there he went to Brown Corp., LaTuque, Quebec, as superintendent, and before coming to East Antioch, he was general superintendent of the parent Brown Co., pulp operations at Berlin, N. H.

Former resident division manager of the San Joaquin Division is Claude M. Stitt, who was promoted April 1 to head the new Central Engineering Division, to be headquartered at Antioch, Calif. The newly created Central Engineering Division is being set up in the former high school building now housing Fibreboard's Research Division, and will be the focal point of engineering planning for the entire company.

Mr. Stitt has been with Fibreboard since 1924, and before that was with the Paraffine Companies, Inc. Before receiving the East Antioch assignment he had been manager of the Antioch Division of Fibreboard for a year and a half. Mr. Stitt is a graduate engineer from the University of California. His many civic activities during his residence in Antioch included 12 years service as city councilman, during which he was twice named mayor.

A consultant in building the mill, on leave of absence from Crown Zellerbach Corp., was E. W. Erickson, who has been with Crown Zellerbach since 1919. He has served at Pacific Mills, Ltd., Ocean Falls, B. C.; the Camas, and Port Angeles mills of the corporation, and was resident manager at Port Townsend, Wash., for several years. He is a graduate of the University of Michigan in chemical engineering.

W. W. "Bill" Burke is office manager of the San Joaquin Division and also of the Truckee Timber Division. He is a Fibreboard career man, having been with the company since he was graduated from college. Starting to work with the company in 1928, he served with Antioch, Sumner, San Francisco, and Stockton Divisions. He was at Stockton nine years as office manager.

S. J. Balog, formerly with General Electric Co. laminated plastics division, is superintendent of the planning department at San Joaquin Division.

A. H. Lindquist is plant engineer. Mr. Lindquist is a Stanford University graduate in mechanical engineering. He was with Austin Co. a number of years and then was with Goslin-Birmingham Manufacturing Co. before coming to San Joaquin Division.

AT EAST ANTIOCH (top row, l. to r.): G. E. STOODLEY, General Logging Supt.; I. R. HARCOURT, Field Engineer in charge of Waste Wood Chipping Plants; L. P. ROSS, Power Plant Supt. (Lower row, l. to r.): C. S. CARR, Asst. Plant Engineer in charge of Power and Maintenance; D. EARL BAKER, Chief Pipefitter; C. V. ENTRIKIN, Instrument Engineer.

Warren J. Current assistant plant engineer, was formerly chief design engineer for Champion Paper & Fibre Co., Canton, N. C.

Assistant plant engineer in charge of power and maintenance is C. S. Carr. Mr. Carr has served for a number of years with Crown Zellerbach at Port Townsend, Washington, and also at the Rayonier plant at Fernandina, Florida.

C. H. Dunn is a board mill superintendent. He succeeded A. C. "Bob" Fuller, who died suddenly in January. Mr. Fuller joined Fibreboard in 1948 at East Antioch, and had a long and interesting career in the industry.

Mr. Dunn went to San Joaquin Division from the Southland Paper Mill, Lufkin, Tex. He started with the Brown Paper Mill, Monroe, La., and after being there nine years he went to Hollingsworth & Whitney Co., Mobile, Alabama.

T. H. Lindley is superintendent of the pulp mill, which includes supervision of the digester room, bleach plant, recovery plant, Tuf-Fir Chemipulper-Defibrator, and washers. He was associated a number of years with Crown Zellerbach at Port Townsend, and with St. Regis at Tacoma.

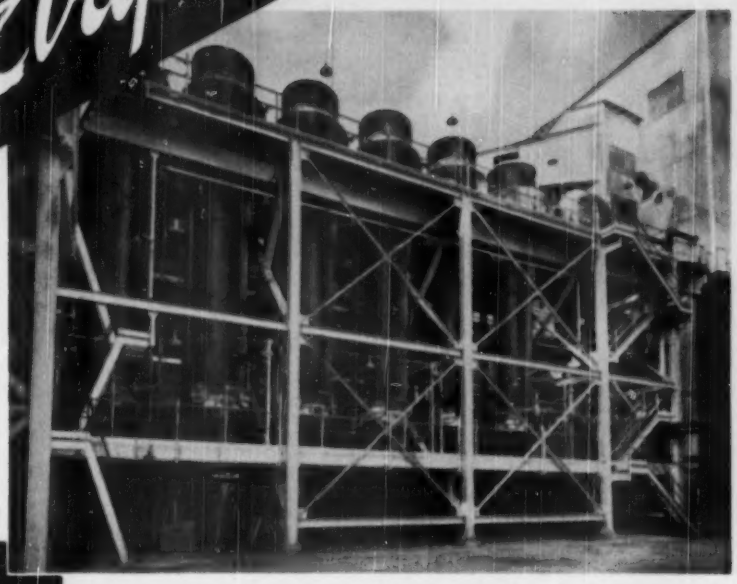
Power plant superintendent is L. P. Ross. He was formerly with Miami Copper Co., Miami, Ariz., and before coming to San Joaquin Division he was with Salt River Valley Water Users Association, Phoenix, Ariz.

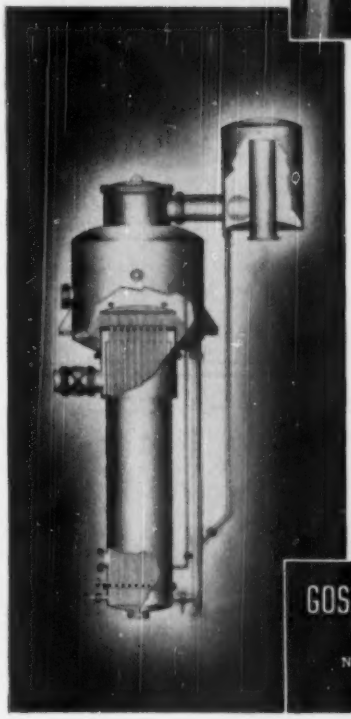
Chief chemist is T. S. Markov, who had been with Fibreboard at Antioch and Stockton for 11 years. He came to San Joaquin Division in 1949.

General logging superintendent (San Joaquin Logging Division) is G. E. Stoodley. Mr. Stoodley was formerly logging superintendent, Sacramento Lumber & Box Co., Woodleaf, Calif., and timber sale

Again it's GB Evaporators

FOR BLACK LIQUOR



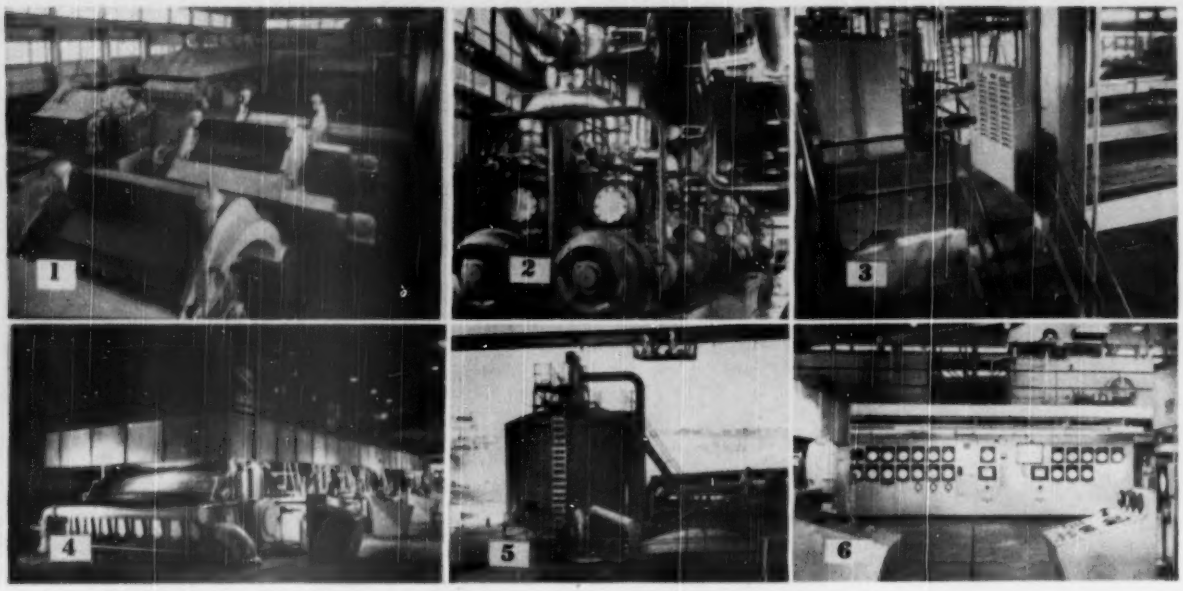


In keeping with the completely modern design of the new Fibreboard Products, Inc., plant at East Antioch, California, a Goslin-Birmingham six body Sextuple Effect Black Liquor evaporator was installed in the recovery system.

FEATURING the most modern engineering and design trends practiced in black liquor evaporation, this unit offers stainless steel protection in the first effect for reduction of maintenance cost, 26-ft. long tubes for higher evaporation rates and higher solids discharge, and internal centrifugal type catchalls for lower installation cost and lower entrainment losses.

The high steam economy obtained with this sextuple effect evaporator, combined with modern design features, assures years of low-cost, trouble-free service.

GOSLIN-BIRMINGHAM MANUFACTURING COMPANY, Inc.
Birmingham, Alabama
NEW YORK: Goslin-Birmingham Manufacturing Company, Inc., 350 Madison Avenue
CHICAGO: F. M. deBeers and Associates, 20 North Wacker



VIEWS IN BLEACH PLANT, SCREEN ROOM AND WASHING PLANT in Fibreboard Products Inc.

1—General view of Improved Paper Machinery Corp. designed and equipped bleach and wash plants. Stebbins Engineering Corp., Seattle, did extensive tile lining here. In background is 4-stage washing system for kraft pulp and 2-stage Tuf-Fir washer. In foreground are chlorination, caustic and first hypo stage washers of bleach plant with second hypo washer at rear left.

2—Pump alley showing Allis-Chalmers pumps which take liquor from storage to bleach-wash plant. Stock lines supplied and Stolpic-Coated by Chemical Proof Construction Inc., Seattle.

3—Screen room showing mixer on left. Note General Electric push button panel and tonnage control unit. Flat screens at right.

4—Closer view of Impco kraft washing system with Ross Engineering ventilating hood.

5—Impco foambreaker and foam tank rises here. Kraft and Tuf-Fir black liquor tanks surround it.

6—Brown Instrument Div. of Minneapolis-Honeywell supplied panels for push-button operation of 4-stage kraft pulp washing and 2-stage Tuf-Fir washing. Link-Belt chip tripper is seen in upper rear—also in Photo 1.

inspector, Red River Lumber Co., Westwood, Calif.

C. L. Morey, wood mill and yard superintendent, spent a number of years with Union Lumber Co., Fort Bragg, Calif.

Personnel manager is G. B. McCuish, with many years in this type of work.

R. C. Gilfillan, purchasing agent, started in the purchasing department, Fibreboard headquarters, San Francisco, in 1946.

Field engineer in charge of waste wood chipping plants is I. R. Harcourt. He has been with Fibreboard since 1924, and came to San Joaquin Division in 1947.

L. A. Lance is chief electrician. He worked for a number of the contractors doing work at Camas, West Linn, and Port Townsend mills of Crown Zellerbach.

Master mechanic is C. F. Munt, who had been with St. Regis, Tacoma and Marathon Paper Mills of Canada, Marathon, Ontario, among other companies.

D. Earl Baker is chief pipe fitter. Mr. Baker served more than 20 years with Crown Zellerbach Corp., principally at Port Townsend.

C. V. Entrikin is instrument engineer. He was formerly with Golden State Co. He has also been an instrument technician with the University of California at Berkeley, and was an instrument man with the U. S. Navy.

H. C. Blanchard is woodmill foreman. Sawyer is Bill Lindberg and Woody Dowd in charge of sawmill filing. J. C. Rollins is yard foreman.

The following are boardmill tour foremen: J. A. Kennard, L. C. Lamberson, A. B. Montgomery, and W. A. Woods. Pulpmill tour foremen are: T. B. Bullock, J. Ruck, H. Scott Smith, and A. M. Toner.

With completion of the San Joaquin Division, Fibreboard has 15 plants strategically located in three major industrial areas of the Pacific Coast—seven board mills and eight converting plants. Combined plants have a daily output in excess of 1,000 tons of paperboard.

Incorporated in 1927 and jointly owned by The Paraffine Companies, Inc., and Crown Zellerbach Corp., Fibreboard has become one of the largest producers and converters of paperboard packaging materials in the U. S. D. H. Patterson, Jr., was president until last December when he resigned, but remains as a member of the board of directors. He was succeeded in the presidency by T. N. Bland, formerly vice president and general manager. R. E. Bundy is vice president in charge of production.

POWER AT EAST ANTIOCH

By G. E. Plaisted
Industrial Engineer, General Electric Co., San Francisco

There are long strides of progress between the first papermaking operations of the Chinese and the modern plant of Fibreboard Products Inc., at East Antioch, Calif.

Manifestation of this progress is seen in the extremely high quality of today's product and high production levels, improvement in processes and machines, higher utilization of wood, chemicals and other raw materials, the present high level of scientific papermaking knowledge and skill, and the vast amount of machinery and electrical horsepower that back up the men who operate paper mills.

This progress is the result of close cooperation between paper mill engineers, machinery builders and the manufacturers of electrical equipment. Improved turbine and electric drives and automatic electrical controls are among the benefits that have sprung from this cooperation. At the new Fibreboard mill there are many interesting examples of how improved drives and controls are helping to solve paper mill engineers' problems of efficient treatment, application and utilization of the basic materials with which they work, wood, water, steam and electric power.

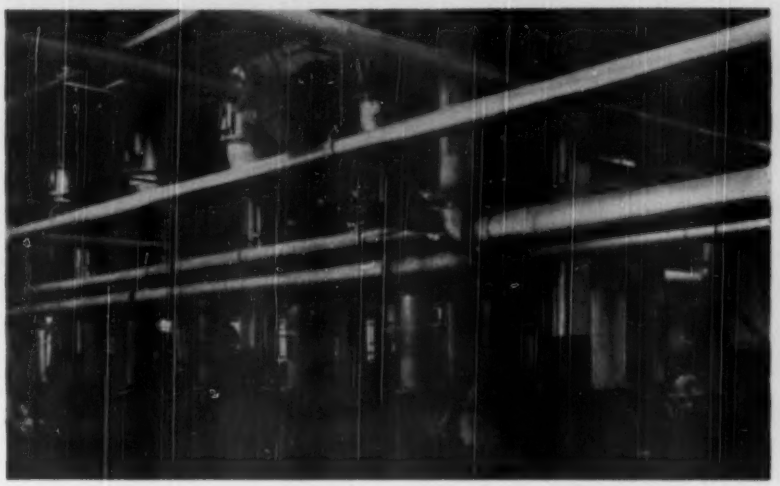
Treatment of water for mill use poses an exacting problem of control. At Antioch two electronic variable speed drives known as Thy-mo-trol (registered U. S.

PROTECTIVE COATINGS

were specified by a far-sighted management at

Fibreboard Products Inc.,

for practically all processed stock and water lines in their new San Joaquin Division at East Antioch, Calif.



to protect product from contamination

to protect piping from corrosive action

More than seven carloads of light-gauge fabricated steel pipe, including hundreds of intricate special fittings, were supplied for the San Joaquin Division by Chemical-Proof Construction. Linings were of Gaco vinyl, Gaco neoprene and phenolics, each specially adapted to its particular type of exposure. Liquid alum storage tanks lined with Gaco neoprene were also supplied by Chemical-Proof.

Chemical-Proof Construction Incorporated

SEATTLE, WASHINGTON

Western Licensees and Distributors for

Gates Engineering Company

NEWCASTLE, DELAWARE

Photo No. 1—In the main pumping plant two G-E Thy-mo-trol electronic variable speed drives operate chemical proportioning pumps to automatically inject water conditioner in direct proportion to the amount of water being used as signaled to them by flow meter.

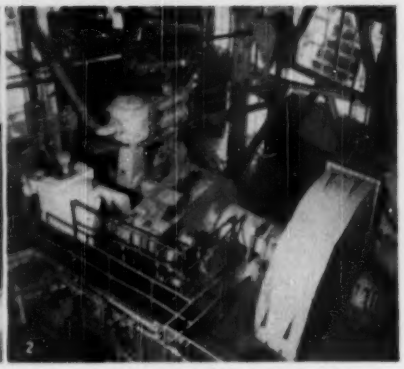


Photo No. 2--2500 hp. General Electric turbine at left drives 175 inch Sumner Iron Works log chipper through Farrell-Birmingham reduction gear. Twenty-foot logs up to 40 inches in diameter are chipped in approximately 18 seconds. Behind turbine is Ingersoll-Rand compressor. Western Gear reducer is on conveyor belt taking away chips.

Patent Office), operate chemical pumps to automatically add the proper amount of conditioner to the water. A flow meter measures the volume of water flowing into the water system and provides a signal to the Thy-mo-trol such that its speed, and therefore the quantity of water conditioner varies in direct proportion to the amount of water being used. This unique application provides automatic control within close limits to assure consistent water condition for its various uses. *(No. 1 Photo.)*

One of the most important problems facing the paper mill engineer is that of providing steam for cooking pulp and drying paper and also for electric generator and other drives. The amount of water, steam and power needed depends upon the type of wood being used, the process and the quantity of end product desired. They must be provided in adequate quantities yet an economic balance must be obtained.

At East Antioch, steam at a pressure of 25 p.s.i. is required for process use. The pressure for economical steam generation being above this level, extraction type turbines are used. They take steam at high pressure and drive electric generators and at the same time low pressure steam is bled from them for the processes. Except for the log chipper the power demands are reasonably constant. Similarly the process steam demands with normal uninterrupted pulp production can be arranged to avoid imposition of severe shock loads on the system. However, the power demands of the log chipper do present a problem. At East Antioch the consulting engineer, Leland S. Rosenor, solved the problem. Exclusive of the chipper, the power and steam requirements dictated the selection of three 5000 kva turbine generating sets for the power house. To use the synchronous or induction motor drive (quite common in the industry) for the chipper would impose shock loads on the power system, would require larger generators, and greater investment. Mr. Rosenor conceived the idea of driving this chipper with a steam turbine. High pressure steam could be used direct from the boilers and the low pressure exhaust steam returned to the process line. A careful comparison of installation economics proved the idea to be feasible. The mechanical problems of turbine speed governing, load shock on reduction gear, torsional stresses and inertia absorption were considered. The General Electric Co. had made many and detailed studies of chipper performance. Power requirements, peak load shocks, load variation with different types and conditions of wood were studied carefully. Turbine engineers studied the governor characteristics. Mr. Rosenor and his steam engineer, Hugh Byrne, then correlated the facts and selected the 2500 hp. General Electric turbine operating at 600 lbs. pressure to drive the 175 in. Sumner Iron Works Chipper through a Farrell-Birmingham reduction gear. *(Photo No. 2.)*

This application of a turbine to drive a chipper has now proven itself. The increased steam demand as a log hits the chipper disc had been calculated such that the steam system remains stable. The turbine governor response is such that before the log is half way through the chipper the turbine is recovering its initial drop in speed. No torsional vibrations have been observed and the contribution of the exhaust steam to the process system is accomplished without balance. This drive warrants the interest of the industry.

Power generation is at 4160V. Yet large blocks of energy at remote locations in the plant are at 440V. It has been proven to be economic to distribute at 4160V to a central power area and there transform to 440V for short feeder distribution. These central power areas are known as load centers and General Electric has provided eight unit sub-stations for them, each rated 500 kva 4160/480V. They offer an efficient means of delivering power at high voltage to those points without the power losses and poor voltage regulation engendered by long feeders at a low voltage. *(Photo No. 3.)*

Many of the auxiliaries such as washers, thickeners, bleach towers, and consistency regulators demand adjustable speed drives. The speed variator or "packaged" Ward-Leonard drive is used widely for this purpose. It can be fed from a Unit Sub Station, and through a motor-generator set transformation provides a source of direct current power. Under simple rheostatic control a d-c motor, mounted on or geared to the auxiliary accurately provides the particular speed desired. The rheostat may be operated either manually or automatically. Wherever adjustable speed was required the speed variator was considered and 19 of such units are installed at this point.

From the standpoint of control a paper machine is not a single machine at all. Instead each of its several sections is a machine in itself. Each section must be so powered that its speed can be definitely and accurately related to the others. In addition, to accommodate variations in stock and other conditions, the drive must be such that the speed relationship of any one section can be varied without effect on the other sections. G-E multiple generators, electronic Amplidyne controlled sectional drives are used at Antioch on both of the two paper machines, one of which is Fourdrinier type and the other cylinder type. Many installations of this modern type of drive are now in successful operation throughout the nation at speeds rated as high as 2000 feet per minute.

In the multiple generator, electronic Amplidyne controlled system each section is a unit in itself and has its own individual generator. The driving motor of each section is connected to the in-driving-shaft of its section through a Western Gear Works reduction unit. *(Photo No. 4.)*

The motor is excited from a constant source so its speed is then responsive to armature voltage. A permanent magnet pilot generator is direct connected to the commutator end of each section motor to provide speed indication of the section. Motor generator sets, each with several generators, provide power for the motors, each motor being supplied by its own generator. Such an arrangement offers the economic advantage of assembling small generators in sets to operate at 1800 RPM and larger units in sets to run at 1200 RPM. *(Photo No. 5.)* This advantage has been realized at Antioch.

The generators are excited by Amplidyne exciters electronically controlled. The Amplidyne is in reality merely a rotating DC amplifier. A few watts of control power input provides kilowatts of output for controlling the generator field.

A master control station located at the wet end of the first dryer of each machine establishes, by simple setting of a dial, the overall machine speed. The dial setting determines the value of an electronically controlled reference voltage. To this reference the voltage of each section motor pilot is compared. Any voltage dif-

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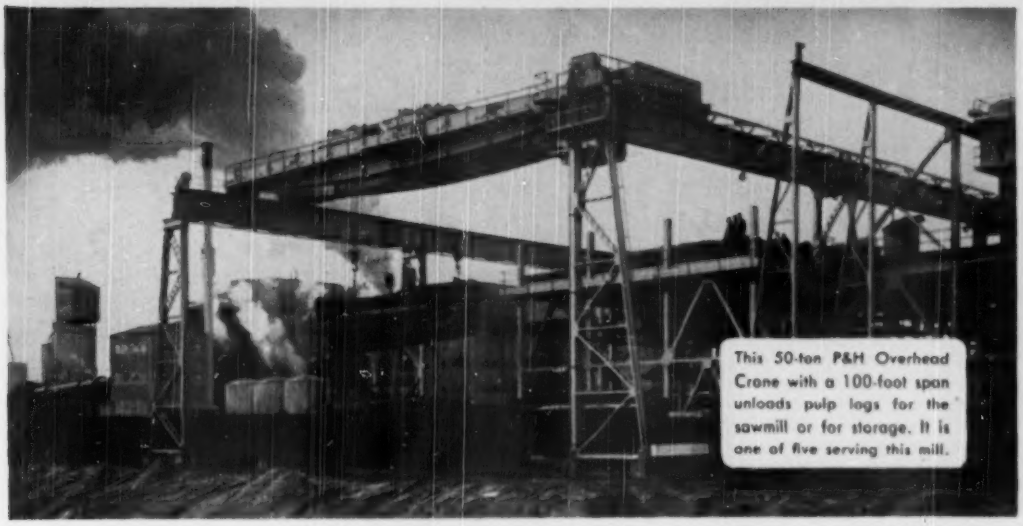

This 50-ton P&H Overhead Crane with a 100-foot span unloads pulp logs for the sawmill or for storage. It is one of five serving this mill.

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EFFICIENCY! This one word describes the new San Joaquin mill of Fibreboard Products, Inc. The same applies to their handling methods — with five P&H Overhead Traveling Cranes providing smooth, fast, low-cost handling, inside the plant and out.

Unloading pulp logs, moving cordwood and service in the bleach plant, machine room and roll pit . . . all these important jobs were given to P&H Cranes. That's because experienced users know that in *any* service, the Added Values in P&H *"Job Engineered"* Cranes mean better control, uninterrupted operation and lower maintenance costs over the years.

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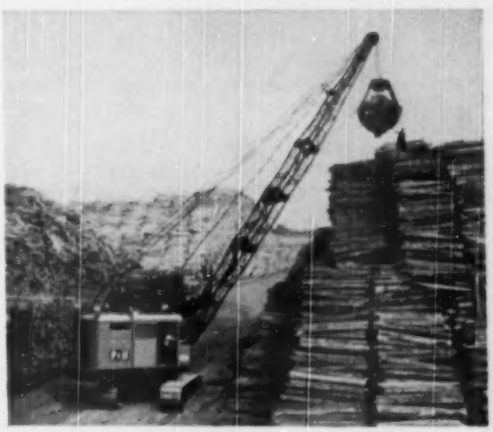

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Photo No. 3—Typical of the many unit sub-stations at the new Fibreboard mill is this 500 kva 4160/480 volt G-E unit.

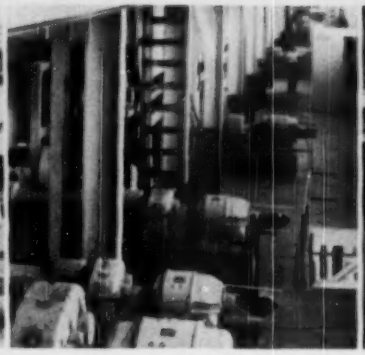


Photo No. 4—Section General Electric drive motors coupled to indriving-shafts through reduction gears. Speed signaling pilot generators bracket mounted on each motor.

Photo No. 5—Bank of direct current generators, motor driven, for various sections of paper machine. Amplidyne exciters in foreground.

ference is transmitted to an electronic preamplifier and through it to the generator Amplidyne to correct the generator excitation and thus its voltage to bring the speed of the motor to the correct value. This has the definite advantages of not only quickly responding to a demand for speed correction but the effort of correction is reflected only on one section and not on the complete drive as would be the case in making a similar correction on a single generator sectional drive or a line shaft drive.

At the tending side of each section a watertight operator's panel provides those functions necessary for the efficient performance of the operator's duties. *(Photo No. 6.)* He can stop or start each section individually. As many sections can be started at once as there are operators, which is not true of any other type of drive. An ammeter gives the operator an indication of the load on each section. Should slack develop in the sheet between sections during threading a "slack take-up" function is provided to momentarily increase the speed of the section to take up the slack. This is accomplished by increasing the voltage on the motor armature and the response is immediate. As conditions vary and a slight speed adjustment is necessary a small rheostat, called a draw rheostat, is provided on the operator's panel to permit the operator to readily compensate for changes as required. Thus, at his finger tips the operator has full control of each section.

The difference in principle between Fourdrinier and cylinder type paper machines is in the wet end. To accommodate this difference the cylinder type machine is provided with a wet end helper drive. The continuous felt from the first press, over the cylinders, through the extractor and primary presses is a belt in function. The first press, without a helper, would pull the entire section and would develop high tension in the felt, which would reduce its life. The helper drive applies motors on each cylinder and the primary presses. The motors have constant excitation therefore their torque is proportional to their current. The helper drive is a constant current type. The operator establishes the current level he desires and then as machine speeds are changed the generator voltage follows to maintain constant current in the group of wet end motors. *(Photo No. 7.)* Thus the tension is maintained at each point in the felt loop and results in longer felt life. Summarizing, the drives for both paper machines provide individual sectional control, maintain accurate speed and respond quickly to adjustment needs.

For trimming, slitting and rewinding, two winders of the regenerative tension design have been installed. *(Photo No. 8.)* Each has its individual power unit with Amplidyne controlled tension during acceleration, winding and deceleration. An operator's panel includes adjustment for both tension and speed. The regenerative tension generator, connected to the unwind stand, replaces any mechanical braking device and feeds back into the circuit the power that otherwise would be lost in heat. Thus an efficient drive is provided.

The overall installation has incorporated the best in electrical power generating and utilization equipment. It is an example of progress on many fronts and a demonstration of the effectiveness of the partnership between paper making and electricity for a better product at lower cost per ton.

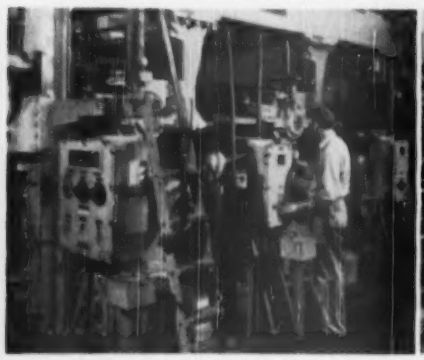


Photo No. 6—At Fibreboard mill, operator panels of individual sections provide load indication, start-stop control and draw rheostat. Here tightness of sheet between sections is being adjusted with draw rheostat.

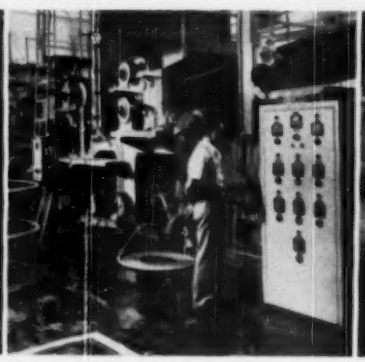


Photo No. 7—C. H. Dunn, board mill superintendent, observes setting of wet end helper control station at wet end of Black-Clawson machine.

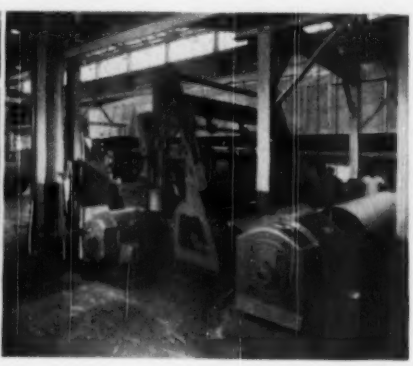
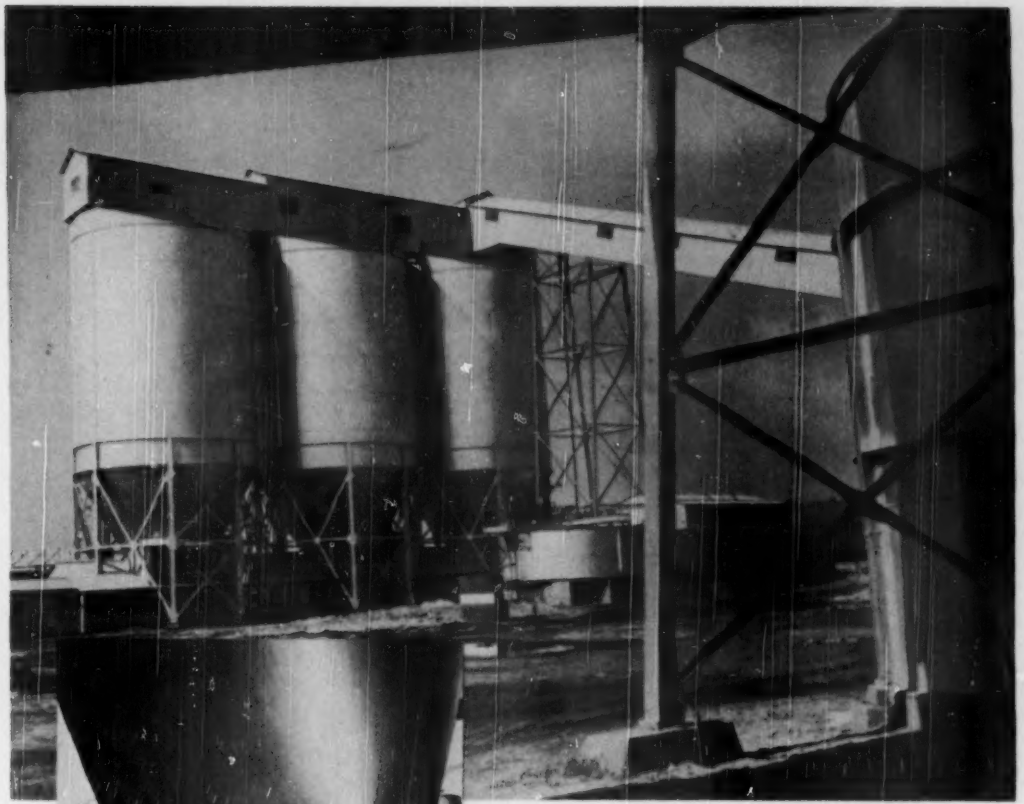
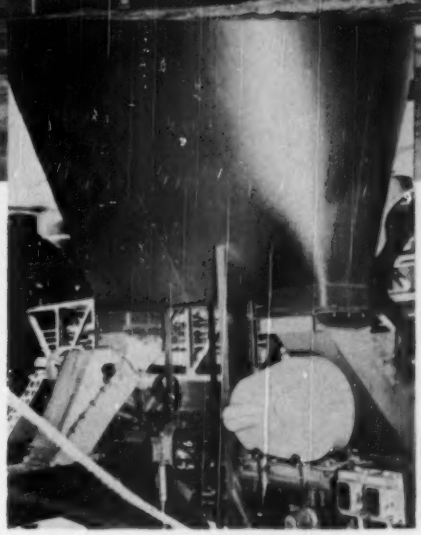


Photo No. 8—Winder drive. Control of tension during acceleration, winding, and deceleration is accomplished by Amplidyne control. Braking is regenerative. Regenerative tension generator in right foreground.



Three 38' x 86'6" Chip Storage Bins, with one 30' x 9' Clarifier Tank and Small Water Surge Tank, Fabricated and Erected by Consolidated Western for Fibreboard Products, Inc., New Plant at East Antioch, California.



Transition Section of double outlet cone bottom on new Lime Storage Tank.

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CANADIAN EXECUTIVE BOARD

Holds Its First Far Western Meeting

Eighteen top executives from companies operating in Eastern Canada went to Vancouver, B. C., in early May, to attend the first meeting of the executive board of the Canadian Pulp and Paper Association ever to be held in the West. The event made history for the industry in Western Canada.

Headed by R. M. Fowler, of Montreal, president of the association, the group included D. W. Ambridge, president of Abitibi Power & Paper Co.; Aubrey Crabtree, president of Fraser Companies; S. L. deCarteret, president of Canadian International Paper Co.; A. E. H. Fair, president of Alliance Paper Mills; E. Lorne Goodall, vice president and managing director, Dryden Paper Co.; George Jacques, general manager, St. Lawrence Paper Co.; A. C. Price, president, Price Brothers & Co.; C. H. Sage, president, Spruce Falls Power & Paper Co.; John Stevens, Jr., president, Marathon Paper Mills of Canada; G. T. Cockerill, assistant to the president, and J. G. Chalmers, manager of operations, Bathurst Power & Paper Co.; P. M. Fox, president, St. Lawrence Paper Mills; B. F. Avery, vice president of KVP Co.; W. H. Smith, vice president of Abitibi; J. R. S. McLernon, director of Dryden Paper Co.; W. H. O'Reilly, secretary of the executive board.

Harold S. Foley, president of Powell River Co., and chairman of the executive board, the first westerner to be so honored and re-elected to that post at the last annual meeting in Montreal, presided at the business sessions.

Mr. Fowler said he was optimistic of the development, present situation and future prospects of the Canadian pulp and paper industry. He also paid tribute to Mr. Foley for his inspiring and imaginative leadership.

While in Vancouver, Mr. Fowler addressed the B. C. branch of the Canadian Manufacturers Association. He said: United States publishers undoubtedly are faced with a serious problem in insuring a future supply of newsprint for themselves, but the situation will not be improved by misrepresentation of the facts by politicians.

Pointing to Canada's record production last year of 5,175,000 tons, mostly for U. S. newspapers, compared with 3,300,000 tons pre-war, he said: "This has been provided under contracts that U. S. publishers could rely upon and be assured that promised tonnage would be forthcoming. It has been sold at a reasonable price, as a comparison of price indexes shows. In these circumstances it becomes a little tiresome to have Canada's newsprint industry made the target of current slanders in Washington."

PARTICIPANTS IN CANADA'S INDUSTRY-WIDE MEETING in Vancouver, B. C., where CPPA Executive Board met. Photos by PULP & PAPER:

1—Prentice Bloedel, president, Bloedel, Stewart & Welch, Ltd.; Hon. C. D. Howe, Canada's minister of trade and industry; Harold S. Foley, president, Powell River Co., and chairman of the executive board, Canadian Pulp & Paper Association.

2—Clifford Crispin, manager, pulp division, H. R. MacMillan Export Co.; E. B. Ballentine, vice president, H. R. MacMillan Export Co., R. W. Ambridge, President, Abitibi Power & Paper Co.

3—S. L. deCarteret, president, Canadian International Paper Co.; Lawrence Killam, Jr., B. C. Pulp & Paper Co.; W. H. Smith, vice-president, Abitibi Power & Paper Co.

4—Two Irishmen meet in Vancouver: W. H. O'Reilly, secretary, executive board, Canadian Pulp and Paper Association; and Leo Kelly, general superintendent, B. C. Pulp & Paper Co.

5—J. G. Chalmers, manager of operations, and G. T. Cockerill, assistant to the president, Bathurst Power & Paper Co.

6—Paul E. Cooper, president, Pacific Mills, Ltd.; C. H. Sage, president of Spruce Falls Power & Paper Co., vice-president of Kimberly-Clark Corp.

7—E. Lorne Goodall, managing director, Dryden Power Co.; Robert M. Fowler, president, Canadian Pulp and Paper Association and Newsprint Association of Canada.

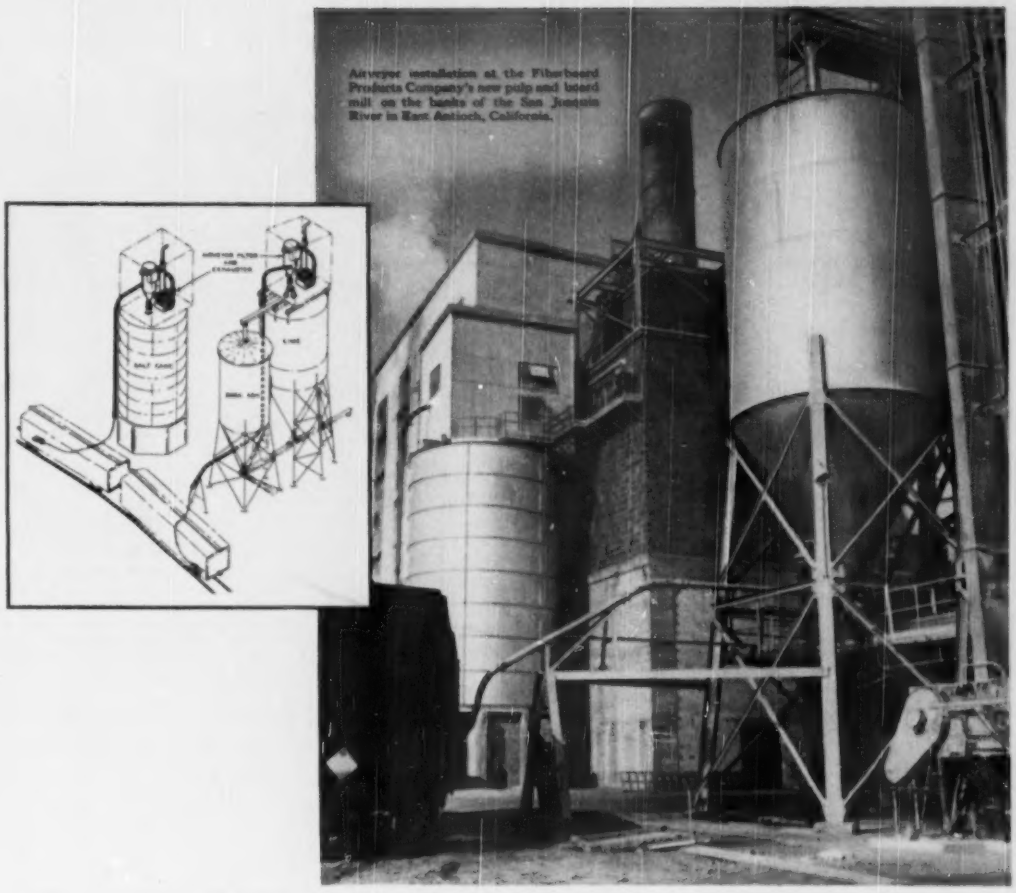
EDWARD BARTSCH, president of Rayonier, Inc., New York City, was missed by his associates for a few weeks this spring due to a minor knee operation as a result of an athletic injury in even younger days. He returned to the headquarters in the Chanin Building early in May, fit and rested by enforced leisure.

JAMES P. BUCHANAN, insurance manager for Northern Paper Mills, Green Bay, Wis., is general chairman of the Green Bay community chest campaign.

H. H. SEARS, assistant sulfite superintendent at the Riverbend, Que., mill of Price Brothers & Co., has been appointed sulfite superintendent, succeeding *R. J. ELLIS*, who retired owing to ill health.

G. C. BROWN is the new assistant electrical superintendent at Riverbend.

H. WARBURTON, assistant to the general superintendent at Kenogami and Riverbend mills, has been appointed groundwood superintendent at Riverbend, succeeding *M. A. MacDONALD*, retired.



Airveyor installation at the Fiberboard Products Company's new pulp and board mill on the banks of the San Joaquin River in East Antioch, California.

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Conveying dry, pulverized materials such as lime, soda ash and salt cake with the Airveyor offers many concrete savings you can't afford to overlook . . . reduced purchase price of bulk over bagged materials . . . reduced cost of unloading and storing bulk materials. Clean and dustless operation, rapid unloading, minimum labor and convenience in storing and reclaiming . . . are just a few of the pertinent advantages which this modern, pneumatic method of conveying provides.

When you have a bulk materials-handling problem, may we suggest you allow us to make a study of your conditions. No two jobs are identical. The selection of the proper equipment and layout best adapted to satisfy any individual set of conditions, should be made by conveying specialists. This will eliminate any time-consuming and costly preliminary surveys by your staff. We are prepared to submit a recommendation, or engineering study, proposal drawings and estimate, for your approval. No obligation, of course.

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MACHINE TENDER Munchausen Stories

New Superintendents' National Prexy Tells One

The story selected for this corner this month is about a remarkable, much-traveled cylinder machine and it was contributed by the new 1950-51 president of the American Pulp and Paper Mill Superintendents' Association.

Just before taking over his new duties at the big Chicago national convention in early June, Charles E. Ackley (left) was prevailed upon to record for posterity this amazing anecdote—from his unrecorded early career.

It just goes to prove that the Superintendents' Association has selected a new leader of many parts—a gentleman who can tell a papermaker's tall tale with the best of them. This is probably the last chance he'll have to dwell on matters of such moment as this one; from now on he has several big jobs ahead of him—touring and encouraging activities in the various Superintendents' divisions and planning their first national convention ever to be held on the Pacific Coast—tentatively set for Portland, Ore., June 24-29, 1951.

A native of Michigan, his actual first job was at Crown Zellerbach in Camas, Wash. (not to be confused with mill described hereafter). Then he went with Consolidated Water Power & Paper in Stevens Point, Wis., then with KVP at Parchment, Mich., and back to Pacific Coast mills. He is now paper mill superintendent of the big Crown Zellerbach mill at West Linn, Ore., where coated papers, news, and other products are made.

Try Your Hand

PULP & PAPER pays $5 for each tall mill tale published here. Mill men or "peddlers" are welcome to contribute. Names and places in story may be suppressed and it doesn't even have to contain a shred of truth.

Here follows Mr. Ackley's story:

Mr. Ackley's Story

The first mill the writer had the opportunity to work in, and is outstanding in his mind, was a one-machine cylinder mill. The machine had been installed in the East, in or about 1870, and was later sent around the Horn, after which it was carried over mountains by pack train.

This machine was a fast machine, and if you started the sheet over the dryers by sun-up, it would reach the reel by dusk. Paper made was red and green building, of a high quality.

Machine consisted of two cylinders, two press, all soft iron rolls and no screens. The machine tender spent most of his time catching rags, cans, shoes, and storage garments as they appeared in the vats, for if these fine materials came over on the felt, it would damage the finish on the iron rolls. Machine was driven by steam engine, if and when there was any steam, for at times the belt would come off the boiler, water feed pump, or salmon out of the river would choke the feed water lines.

At starting and quitting time the machine tender blew the whistle, as he was responsible for everything. At times the paper would come over the dryer wet, and when a check was made, you would find that someone, in the sorting room, or beater room, had taken the weights off of the press to throw at the salmon that were migrating up stream.

The dryer gears on this fast running machine were held on with set screws, as the machine was made before keys were developed. At times, the dryer would stop, and the gears would run. But due to the fine quality of paper being made, and the fast momentum of machine, the paper would run right along.

This machine in some ways was very modern, as the dryer section and calender's were combined. Dryers were of one deck design, with calender roll mounted on each dryer, to give the paper supercalender finish, and to trim the backtender's fingernails as he was passing the sheet over the machine.

The machine also had a calender stock, where all fine finishing was done; also a reel of most modern design. Winder was operated by the machine tender and backtender up until the writer arrived, when after a long arbitration period, the company agreed to put on a former boy, to help run winder, clean water flume, catch rats and polish the machine tender's monkey wrench, and other small duties.

The backtender was a very young man who had worked on this machine some 40 years, and had never been promoted. However, when the writer left, to travel to a greener pasture, he promoted this young chap to machine tender, with a parting admonition to hold the speed down, and keep the snoose cans out of the vats.

Personals

WILLIAM H. CHISHOLM (left), Assistant to the President and to the Executive Vice President of Oxford Paper Co., New York, was elected recently a Director of the company. The Directors met in Portland, Me. Mr. Chisholm has been with Oxford since 1940 and is Vice President of Rumford Falls Power Co. and a Director of Nashwaak Pulp & Paper Co.

F. O. "NICK" BOYLON (right) former Paper Mill Supt., Tissue Section, Crown Zellerbach Corp., Camas Wash., where first facial on Coast is made, has been appointed Assistant Resident Manager, Pacific Mills, Ltd., Ocean Falls, B. C., a C-Z subsidiary. He takes over his new duties July 1. C. W. E. Locke is Resident Manager. Mr. Boylon moved West a few years ago from the Scott organization and was mill manager at Fernstrom Paper Mills, Inc., Pomona, Calif., before going to Camas.

Dickinson, of Gulf States Paper Corp., Dies at Tuscaloosa

Frederick W. Dickinson, general manager, director and senior vice president of Gulf States Paper Corp., died May 5 at his home in The Highlands, Tuscaloosa, Ala. He was born in Canada in 1876, came to the U. S. in the nineties and was married to the former Grace Golden at Benton Harbor, Mich., who died in 1933. In 1935 he married the former Mrs. Mary Nuzum Snow, who survives him.

Starting as a salesman with Gulf States in 1900 he became sales manager in 1903 and moved to Tuscaloosa in 1929 when the business concentrated there.

NLRB to Have Pulp-Paper Chief

The editorial on page 25 of last month's issue of PULP & PAPER regarding the need for a separate pulp and paper division, with its own experienced chief, in the reviving NLRB (which would be the WPB of another war) brings the until now confidential news that such a man, widely known in the industry, has been chosen by Mathias Niewenhous, well known wood products executive, who is NLRB's chief advisor on forest products.

The appointee is at present undergoing the usual investigation for clearance to handle top secret information in government work. His name cannot be announced until clearance, but it is one very acceptable to the industry. Our source—not Mr. Niewenhous— or any government official—is an industry leader close to Washington.

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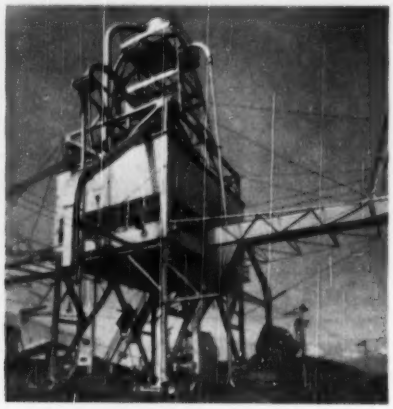
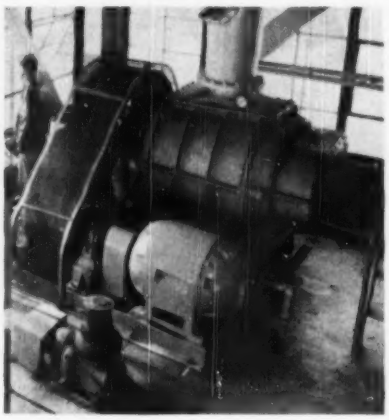


Huge gantry supporting Product Recovery Units and piping for Sutorbilt Pneumatic Conveying System.



Sutorbilt 22x36 Blower, which is the heart of the Pneumatic Conveying System at Fibreboard.

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Julson Appointed Manager Of Springfield, Ore., Mill

Joseph O. Julson (left), former general manager of the Pulp and Paper division of the Diamond Match Co., has been appointed mill manager of the nearly year-old Springfield, Ore., kraft pulp and containerboard mill of the Weyerhaeuser Timber Co., according to announcement by Howard Morgan, manager of Weyerhaeuser's pulp and paper division.

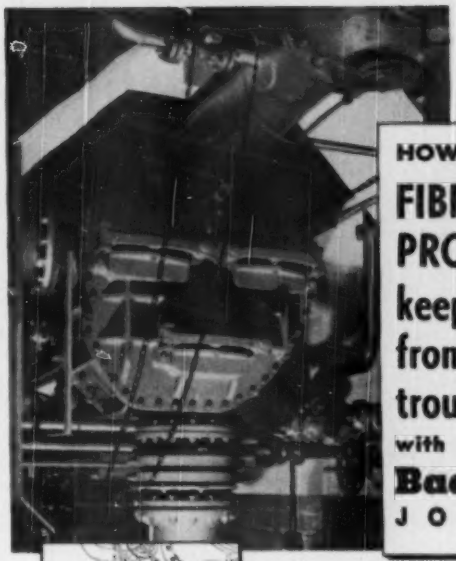
Mr. Julson, his wife and his two children left their home in upper New York on May 13 for a leisurely westward trip by automobile—their chance to see a lot of the U. S. at close range en route, as he was not due until June to take over his new duties. They have already purchased a house in Eugene, Ore., just two miles from the Springfield mill.

"I am, of course, very happy in this new opportunity in the Pacific Northwest, but I do want to express publicly my very great regard for the Diamond Match organization, with which I have been connected for 17 years—ever since my graduation from the University of Minnesota in 1933," Mr. Julson told PULP & PAPER.

His duties in New York were over the pulp mill at Ogdensburg and the paper mill at nearby Plattsburg. They were units of the former B-F-D Company which merged with Diamond Match in 1947, which by that time owned and operated the mills.

Selected as one of the most unusual and valuable papers given at an association meeting, Mr. Julson's paper, "Ramblings of a Superintendent," will be remembered as the leading feature article of the August 1949 issue (page 33) of PULP & PAPER. The paper was given at the Superintendents National Convention in Atlantic City last year—the first half of it dealing with what superintendents could, and should, do in public and industrial relations; the second half with operational and manufacturing problems as they were met and solved by a superintendent.

Born in Pipestone, Minn., and a school college of engineering graduate at Minnesota, Mr. Julson went with B-F-D at Plattsburg in Oct. of 1933 as shipping foreman. He worked up through various mill and office positions until he became chief engineer in 1942. He became general superintendent, and later general manager of the pulp and paper division.



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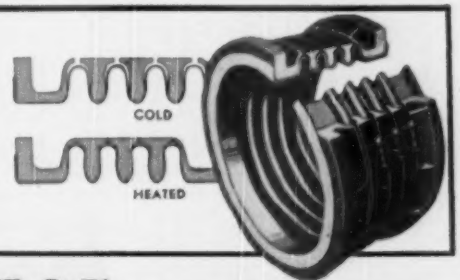

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Safety in the South

SUB-CONSCIOUS PROBLEM REVEALED

AT SOUTHERN SAFETY ASSOCIATION meeting held at Pensacola, Fla.

Top row (l. to r.): C. C. MacPIKE, St. Regis, Pensacola, Chairman of Association, who presided; DALLAS HENRY, Southern Advance Bag & Paper, Hodge, La.; O. J. BIENVENU, General Container Div. Supt. Gaylord Container, Bogalusa, La.; O. J. SHERMAN, Safety Director at Gaylord; V. F. UNDERWOOD, Safety Engineer at Gaylord. Mr. Sherman and Mr. Underwood are Co-Chairmen of association for 1950-51.
Lower row (l. to r.): A. S. KEENE, Armstrong Cork Co., Lancaster, Pa.; DR. KARL R. KARLSON, Vice Pres., Mobile Paper Co., Mobile; both speakers; JOHN PACE, Vice Pres., St. Regis, Pensacola, who welcomes delegates; C. L. KUNICK, Gaylord Container's Bag Div. Supt.

That industrial injuries sustained by workers sometimes rise from a subconscious will to self-destruction, presenting a challenge for a forceful program for suppression just as many diseases have been controlled through determined efforts of the medical profession, proved a major theme for the Southern Pulp & Paper Safety Association's 7th annual meeting in Pensacola, Fla., April 24-26.

Round table discussions revealed that while some points in conflict remain, safety directors accomplished much progress during the year closing toward achieving uniformity.

V. F. Underwood, safety engineer of Gaylord Container Corp. bag plant, and O. J. Sherman, Gaylord mill safety director, will serve as co-chairmen for the 1951 meeting in New Orleans and Bogalusa, La.

Pensacola sessions opened with a profound, inspired talk on basic causes of accidents by Dr. Karl R. Karlson, now vice president and general manager of Mobile Paper Mill Co. A graduate physician, Dr. Karlson practiced medicine in Sweden and the United States; entered paper mill chemistry; then management. Dr. Karlson's basic theme was that essentially the entire program for elimination of injuries to workmen in industry must now resolve itself to the individual basis.

Man, according to Dr. Karlson, possesses (1) a will to live, and (2) a will to die, this urge to self-destruction presenting the problem for solution. At a time when man thought fiercely in terms of self-preservation, the Christian teaching was revolutionary. The answer to the problem of industrial accidents lies within the Darwinian theory, i.e., cultivating the individual's desire to live, he said, describing it as the real basis for safety and without which no man can be successfully trained. The man must be taught to abide by the laws of nature; must not be trained to think a machine will protect him from himself.

Asserting the man in industry must have a lot of schooling to perform his task, Dr. Karlson urged the reaching of parents through Parent-Teacher Clubs to teach their young children (preferably below the 7th year) on safety within the home; and selective school training for industrial employment rather than forcing all to undergo the basic teaching for the professions. Children, particularly, must be trained to know the forces involved in industrial processes. The safety men, as a group, he said, should apply pressure on schools for proper education.

The foreman provides the approach to the individual worker, which makes the first aid course an essential practical training for the man who will be a foreman, he said. This training should not be on a

(Continued on Page 80)

PROGRAM PANELS AT PENSACOLA SAFETY CONVENTION:

Top group (l. to r.): R. W. GRAY, Union Bag, Savannah; MISS ANN EPERLY, St. Regis, Pensacola; REEVES SIMS, Stockton Tool & Die Co., Birmingham, Ala.; A. S. KEENE, Armstrong Cork, Lancaster, Pa.
Lower group (l. to r.): GEORGE SMITH, International Paper Co., Camden, Ark.; RUSSELL E. BELL, Crossett Paper Mills, Crossett, Ark.; ERNEST B. LAMBTON, St. Regis, Pensacola; C. L. R. DOUGHERTY, Union Bag, Savannah, and E. P. MARCONI, National Safety Council.

Etching, 1855, from the Bettmann Archive

"Take a Letter, Please!"

Centuries before the invention of shorthand and the typewriter, the public scribe was a familiar figure in the cities and villages of the Old World. He rendered a useful service, conducting business and family correspondence for those who could not write. Also, he could be counted on to have a few sheets of precious paper. In those days paper was scarce the world over, for it was all handmade. The miracle of modern paper making lay far in the future.

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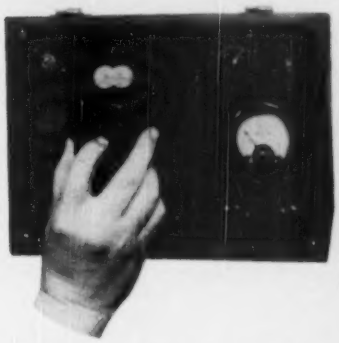

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ALUMINUM SULFATE

Standard: Lump; Ground, 99% thru 8 mesh, 95% thru 10 mesh; Powdered, 95% thru 100 mesh. Liquid, 32° Bé.
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(Continued from Page 76)

"humanitarian basis" but must be strictly the "cold turkey" conception of preserving a skilled worker to prevent loss of production. Training should start before a man becomes foreman, and his record before promotion should show both a good safety record and an ability to put a man on the right job.

The increasing intrusion of union rules into foreman selection was deplored by Dr. Karlson in its trend toward utilization of "seniority" alone. At first the union contract in respect to foreman promotion read "ability being equal"; next it was changed to read "relative ability," which was afterwards read to mean "ability on that particular (foreman) job." He said in his opinion this served to hold back the man who possesses an ability to go farther up than foremanship. Now, it reads "comparative," he added.

Speaking at a luncheon, Raymond E. Barnes, chairman, Florida Industrial Commission, urged that "we should prevent rather than pay" for industrial accidents. He spoke of enforcing an industrial safety code by legislation and/or mandatory state code. Discussion on making a safety program work and a round table on women in industry were held.

A trip was made through the two mills of St. Regis Paper Co., 17 miles from Pensacola, at Cantonment, and other events were deep sea fishing, golf tournament, a harbor trip, and banquet. There Dr. J. Hillis Miller, president of Florida State University of Florida, expressed his view that the South had been slow in spending tax money for forest fire protection, reforestation, and research.

Awards for Mead and NCC

At the banquet, the Mead Corp. mill at Harriman, Tenn., and the National Container Corp., at Jacksonville, Fla., received a joint award for the greatest advancement during 1949 in reduction of industrial disabling accidents.

On Wednesday there were interesting shop-talk discussions of reporting injuries and investigating of accidents. An interesting, modern touch in the discussion revealed the value of wire recorders and other dictating machines in taking statement of workmen involved in an accident before they are apt to get dangerous or confusing outside counsel.

A talk on Navy methods of training fliers and other aerial personnel to be careful was given at a luncheon by Admiral William Sinton, U.S.N., retired.

Need for identification of the safety program with production was outlined by E. C. Jacobs, New York district engineer for American Mutual Liability Insurance Co.

Officers named, in addition to the co-chairmen for 1950-51 included: C. C. MacPike, St. Regis Paper Co., director; D. J. Brett Jr., National Container Corp., Jacksonville, Fla., secretary-treasurer; George W. Johnson, Southland Paper Mills, Lufkin, Texas, director; J. S. Francis, International Paper Co., Bastrop, La., director; and Dallas E. Henry, Southern Advance Bag & Paper Co., Hodge, La., a director.

1950 SHIBLEY PRIZE AWARDED

Pacific Coast Section of TAPPI held the annual Shibley Award contest program with the five competitors presenting papers at Camas, Wash. Some 60 students and faculty from seven colleges were guests. Crown Zellerbach provided lunch for the group after tours of the mill. R. G. Mispley, supervisor of product quality and development, at lunch discussed phases of the operations not apparent from visits. Other C-Z personnel participating were W. C. Jacoby, technical supervisor, and V. C. Gault, supervisor of industrial and community relations.

Rating tops among the five papers delivered at the meetings as entrants for the Shibley Award was "Salinity of Saltwater Borne Wood," prepared and delivered by John T. Firestone, Weyerhaeuser Timber Co., Everett, Wash. At this mill about three-quarters of the wood supply is transported by salt water. The amount of salt taken into the wood is approximately 5.1 pounds for each air-dry ton of chips. In conclusion Mr. Firestone said, "In a closed system, such as magnesium base, this salt must be considered, for it could build up to a dangerous level and cause trouble at various points of the operation."

Other participants and papers: Berry W. Bailey, Soundview Pulp Co., Everett, "Determination of Total Solids in Ammonia Base Sulfite Waste Liquor by Conductiometric Measurements"; William F. Farley, Crown Zellerbach Corp., Camas, "Product Segregation in a Paper Mill"; William S. Milne, Publishers' Paper Co., Oregon City, Ore., "Furnish Calculations on Beater Fed Machines"; Emerick J. Dobo, Crown Zellerbach Corp., Camas, "Nomographs and Their Application to Continuous Kraft Bleaching."

Dr. F. B. West, assistant professor of chemical engineering, University of Washington, gave a talk titled "Design of Packed Absorption Towers."

H. A. "Gob" Des Marais, General Dyestuff Corp., San Francisco, was speaker of the evening, relating impressions of Japan.

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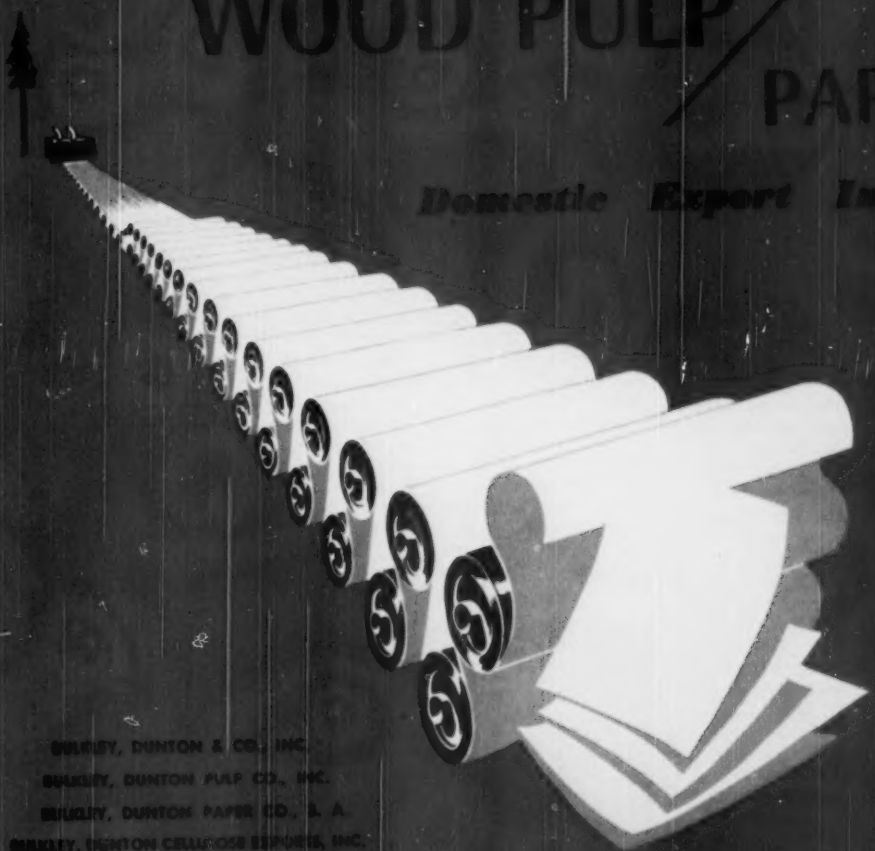

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BECKETTS SEEK 2ND MILL

New Jersey Firm Buys Marcalus

Although outbid for the Marcalus Manufacturing Co., Lincoln, N. H., the Becketts of Ohio and their associates are still in the market for a mill if one can be found which will suit their plans and which, in the light of such plans, is for sale at the right price.

This was told to PULP & PAPER by William Beckett, executive vice president of the Beckett Paper Co., Hamilton, O., in New York City on the day word was received from Federal District Court at Newark, N. J., that the Solvar Co., Clifton, N. J., had topped the figure submitted by the Beckett-Franconia Company, Inc., the organization formed to bid on the New England mill.

Beckett-Franconia is headed by Guy Beckett, also president of Beckett Paper Co., and William Beckett, his cousin, is executive vice president. Others associated in Beckett-Franconia are well known in New England industry and include: James C. Crump, who has been manager for the Marcalus operations; Valentine Frederick; Robert K. Stevenson; and Gov. Sherman Adams of New Hampshire. Presence of Gov. Adams in the group is of interest because of his part in bringing Parker-Young together with N. Marcalus to help the transaction whereby the famous maker of parlor games sold the mill property to Mr. Marcalus and his associates. This was, of course, prior to Sherman Adams' governorship, but he was even then well known for his interests in New Hampshire industry and when it became apparent that Parker-Young was to sell the Lincoln mill he was instrumental in keeping the industry within the State.

William Beckett made it clear that it is hoped to keep the Beckett-Franconia group together even though formed originally for the purpose of bidding on the well known mill when trustees filed a petition for leave to sell. However, because of geographical and other commitments it could be possible that some personnel of the Beckett-Franconia group may change with any future deal, although Mr. Beckett declined to comment on this point. It is true, he said, that the mill acquisition need not be in New Hampshire, nor even in New England. It is understood that the operation of the new property had not been intended to tie-in operationally with the Ohio mill, but Mr. Beckett would not discuss at this time any detailed plan involved.

Considerable interest was attached to the news of the Beckett-Franconia bid for several reasons. It would have been unusual for any Ohio papermaking family, certainly as traditional as those of New England, to step eastward into New England. The present Becketts are the third generation in the industry, the founding

GUY BECKETT (left) and WILLIAM BECKETT (right), his cousin, are interested in acquiring another mill to tie in with Beckett Paper Co. in Ohio.

Beckett having gone into manufacturing from the jobbing end with which he became familiar when traveling out of Omaha for the Western Newspaper Union. Further interest attached to the proposed deal because William Beckett is president of the American Pulp Consumers Association and the purchase of the Lincoln mill would have brought him into the field of the integrated mill. For the old Parker-Young property consists of a groundwood mill in connection with the three-Fourdrinier paper mill which two years ago *(see page 40, Sept. 1948* PULP & PAPER*)* underwent considerable improvements after purchase by Mr. Marcalus.

The successful bidders, Solvar Co., are new to the industry but are said to be successful operators of chain bakeries and other businesses. Unable to reach them directly before press time PULP & PAPER received their names through Mr. Marcalus who at the same time denied strong rumors that he might at some future time continue his interest in the mill. Officials of Solvar, he stated, are: Anthony Peccatta, president; M. S. Somers, vice president; David Colman, secretary; and F. M. Messina, treasurer. Mr. Marcalus stated that Solvar topped the Beckett-Franconia bid by $50,000 and were prepared "to go much higher." He said that the mill would not be operated to supply paper or pulp for any existing enterprises of the owners but would be operated independently.

As for his own plans, Mr. Marcalus said that he did not intend to re-enter the paper industry at the moment and enterprises in the east, midwest and far west would keep him occupied.

Walter Geist Re-Elected President of Allis-Chalmers

Stockholders of the Allis-Chalmers Manufacturing Co. recently elected Walter Geist to his ninth term as president of the company, and re-elected all other officers and directors of the firm.

Directors renamed at the annual meeting are James M. Barker, Chicago, Ill.; Fred O. Bohen, Des Moines, Ia.; W. C. Buchanan, Milwaukee, Wis.; Hugh Comer, Sylacauga, Ala.; James D. Cunningham, Chicago; W. C. Johnson, Milwaukee; Walter Kasten, Milwaukee; Ernst Mahler, Neenah, Wis.; Louis Quarles, Milwaukee; Leigh Willard, New York, N. Y.; and W. A. Roberts, Milwaukee. Geist also was re-elected to the board.

NOPCO FORMS PACIFIC DIVISION

OFFICIALS OF THE NEWLY ORGANIZED PACIFIC DIVISION OF NOPCO (left to right): Perc C. Brown, Vice Pres.; Harold A. Swanson, Gen. Sales Mgr., and Arthur V. Swarthout, who conducts market survey.

Nopco Chemical Co., makers of a broad line of industrial chemicals for the paper industry and other products, has announced formation of its new Pacific Division. Announcement was made by Nopco president Thomas A. Printon at the home office, Harrison, N. J.

This new division will handle sales and all other company activities for California, Washington, Oregon, Idaho, Montana, Arizona, Nevada, Utah, Colorado, Wyoming, New Mexico and British Columbia.

Mr. Printon pointed out that increased sales in this area, plus rapid industrial expansion of the West, make it important to establish a permanent base on the coast. Special emphasis will be placed on the company's industrial chemical sales.

The Pacific Division will be headed by Perc S. Brown, a company vice president, assisted by Harold A. Swanson as general sales manager. Arthur V. Swarthout, formerly of the fiscal department, will handle the extensive market survey work required.

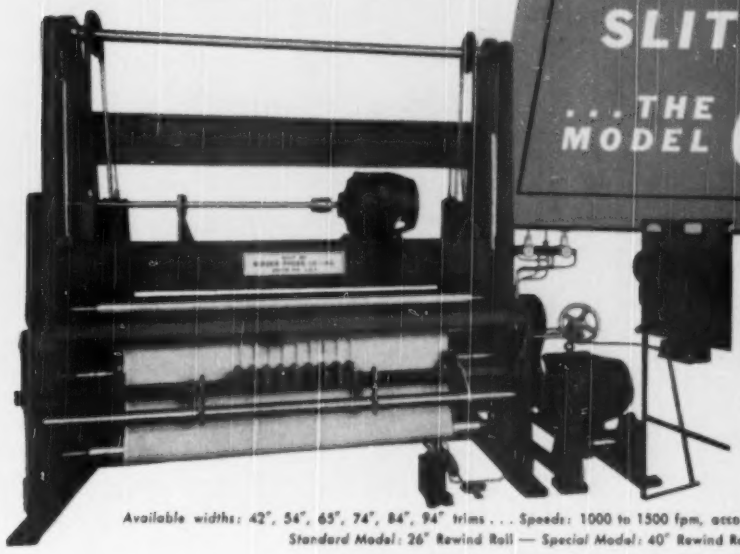
Mr. Brown, in preparation for this move, has spent much time in the last year at Richmond, Calif., where Nopco already has a vitamin oil plant. He will retain his active role as an officer of the company and member of the executive committee and the board.

Mr. Swanson has been with Nopco 13 years, eight as patent attorney and five as general counsel. He has wide and intimate knowledge of Nopco products. He holds a degree in chemical engineering from Northeastern University and law degree from George Washington.

Mr. Swarthout planned to leave for the coast about June 1, to start survey work. Mr. Brown and Mr. Swanson, however, will not take up residence there until later in the year.

Kidder Announces

A NEW GEARLESS SLITTER ... THE MODEL G.T.



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Shear-Action Cutting severs web. Shaft-mounted, two-edged back cutters, 3/4" wide, are driven slightly faster than the web. Ball-bearing front cutters, rotating by pressure against back cutters, are kept sharp by latter's harder metal.

Slit Webs Are Wound either on core or on a collapsible shaft, in cradle formed by two drums, under pressure from a third above. The two drums are driven by main motor; top roll is driven by a rheostat-controlled auxiliary motor.

Hardness Controlled by varying pressure and speed of top roll assembly, which is heavy enough to wind the hardest roll. Pneumatic cylinder provides counterbalance ranging from zero to complete lift.

Web Tension is provided by water-cooled, rotating-disc brake. Actual tension control is through pneumatic diaphragm exerting smooth, flexible pressure on the two stationary plates.

Bow Bar helps smooth out wrinkles and handle baggy stock. Bar, adjustable as to angle, can press on web's center or edges, combining with the mill roll's bias adjustment to keep web straight and taut.

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QUEBEC EQUIPMENT TRENDS

In woods operations of eastern Canada the trend is definitely towards greater use of mechanical equipment, according to J. A. McNally, resident manager of Brown Corp., Quebec City.

Mr. McNally's own company has been carrying out a 16-mile winter time truck-semi-trailer hauling operation in the area lying about 1500 feet above sea level in the headwaters of the St. Maurice River which flows into the St. Lawrence from the north about 80 miles east of Montreal.

The loads consisted of fire-killed pulpwood logs 13 ft. 4 in. long, scaling about 3 cubic feet per log and weighing 33 pounds per cubic foot.

The operation covered the movement of 3,500,000 cubic feet of black spruce and balsam pulpwood. Preparatory work included construction during the summer and autumn of the roads and the loading areas where the logging contractors landed the logs in rollways, and preparation of the dumping ground at the lake.

The wood was loaded with Drott Skidloaders, hauled on semi-trailer equipment (Diamond T trucks and trailers) and, depending on the conditions encountered during the hauling period, unloaded with a double-drum winch or with an International wheel tractor equipped with pusher arms. Roads were prepared for winter hauling, plowed and maintained with a model 99H Austin-Western motor grader, equipped with V-plow, snow wing, grader blade and scarifier.

The all-steel semi-trailers were designed to carry 25-ton payloads over rolling country at a speed of 16 miles an hour.

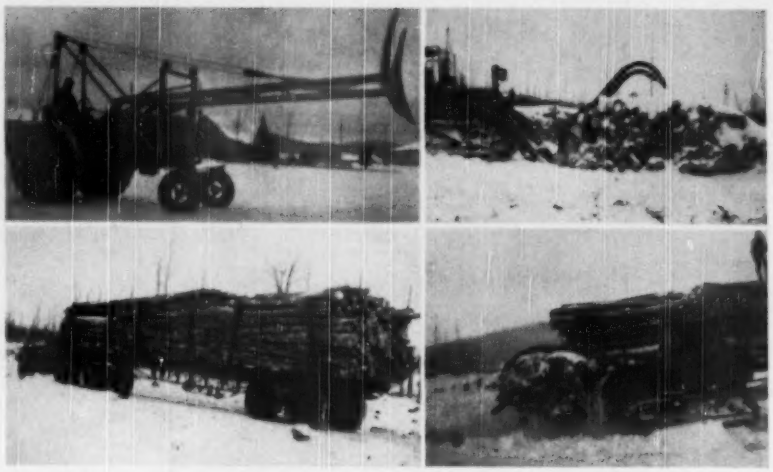
"The most important problems in any mechanical transportation project are to secure a proper balance and synchronization of loading, hauling and unloading units," says Mr. McNally, "and to keep down the loading and unloading costs—the 'terminal and transfer charges'—while hauling maximum payloads."

The front-wheel drive of the trucks was particularly useful in "off-the-road" maneuvering at loading and unloading points, according to Mr. McNally, and in climbing adverse grades, although it was necessary occasionally to sand adverse grades over 4 per cent. Tire chains were not used. Mr. McNally's experience is that snow in the upper St. Maurice region is drier and more granular than in localities closer to the St. Lawrence and the Atlantic coast, and that the coefficient of friction of rubber on snow is greater in the former region.

Two different methods of unloading were developed:

1. With the International wheel-type tractor with improvised pusher arms for unloading into open water and onto the ice when thick enough to support the loaded trailers.

2. With a wire rope and double-drum winch for hauling the 500 cu. ft. bundle of wood from trailers out onto the lake during the period between open water and thick ice.



BROWN CORP. OPERATIONS IN THE ST. MAURICE HEADWATERS COUNTRY: Top left—International Wheel-type Tractor equipped with pusher arms. Lower left—Rear view of loaded Diamond T Truck and Trailer. Top right—Drott Skidloader gathering load. Lower right—Drott Skidloader under way with 13-ft. pulp logs.

With the former device unloading consisted of tripping the stakes, pushing off the wood, advancing the hauling unit and replacing the stakes. This process took an average of 4.4 minutes per load with a crew of five men. It was by far the simpler, faster and more economical, and would have been the standard method if it were not for the early period of thin ice.

When the second unloading method was used, the hauling unit remained on shore. Two ⅞ inch wire rope slings were placed around the 500 foot bundle of wood which was then dragged off the trailer and out onto the ice, using a double drum winch set up on the far shore and equipped with a mainhaul drum using ⅞ inch wire rope and a haulback using ⅝ inch wire rope. This method was disadvantageous in that the pile of logs created must be pulled apart with machines or manpower during the spring drive before the logs can be sluiced from the lake.

Mr. McNally emphasizes that the procedure described should not be interpreted as the "last word" by any means, but the fact remains that on long hauls in the woods of eastern Canada there is a trend away from sleighs and from track-laying vehicles and towards units of year-round use.

Meetings

Forest Research Society Industry Show—Armory, Portland, Ore.....June 26-30

Better Wood Use in West Revealed in Institute Report

Much better utilization of wood resources by Pacific Coast industries than was the case 10 and 20 years or longer ago, is revealed in the first of a series of inventories on unused wood (this one on four northern counties) issued by the Washington state agency created in 1947, the Institute of Forest Products, located at the University of Washington, with Ralph G. De Moisy as technical director.

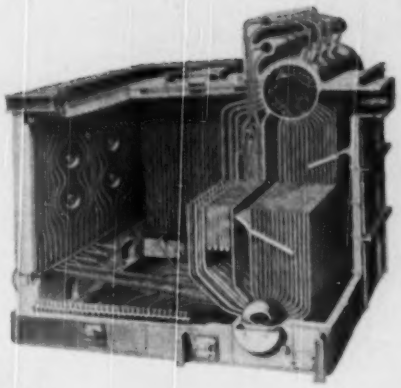
It reveals that in 1948, 116,793,000 board feet or 7.7% of total wood volume used by Washington state pulp mills came from salvage loggings operations, primarily in Douglas fir, now widely used for the kraft process.

"Logging machinery manufacturers and pulp companies are working together to develop new and more efficient machines for relogging," said the report. "The problem is complicated by the wide range of sizes and forms of salvage material."

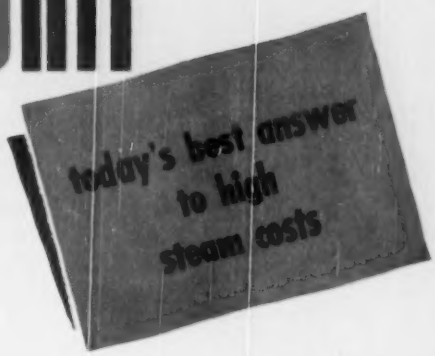
It recalled that the Hodgson report of 1926-27, which, incidentally was published in this magazine, revealed an average of 21,000 bd. ft. (42 cords) per acre in logging leftovers in the Washington-Oregon Douglas fir region. In 1940, Prof. Bror Grondal, U. of Washington, found an average per acre of 5,156 bd. ft. (10x8 ft. and up) and 2,895 cu. ft. (5x4 ft. and up) of pulpwood only in western Washington. The Matson and Grantham report in 1944 found a regional average of 10,000 bd. ft. per acre (8x8 ft. and up) or 2,500 cu. ft. to a 4-inch top. This study by the institute indicated for 1948 an average of only 2,800 bd. ft. per acre (8x8 ft.) or 1,627 cu. ft. per acre (4x4 ft. and up) in the four counties — Whatcom, Skagit, Snohomish and Island, where five pulp or pulp and paper mills are located.

C-E Vertical-Unit Boiler, Type VU-50

The Unit shown at the right is but one of a family designed to serve virtually every industrial requirement from about 10,000 to 300,000 (or more) lb of steam per hour, pressures up to 1000 psi and steam temperatures to 900 F. There are Vertical-Unit Boilers suitable for all methods of firing, including pulverized coal, all types of stokers, oil, gas, or refuse fuels.



C-E Vertical-Unit Boilers



Modern steam generating equipment can't lower the price of a ton of coal or a barrel of oil, but it can produce more steam from every ton of coal or every barrel of oil. The modern unit can't lower the cost of a man-hour but it can and does operate so reliably that maintenance is kept at a minimum.

C-E Vertical-Unit Boilers represent truly modern standards of design. To an exceptional degree they incorporate all the important advances in steam generation made in the past twenty-five years . . . advances that have resulted in substantially increased efficiencies and lower operating costs. At today's high costs of fuel and labor, these gains in operating efficiency may well prove the difference that will make replacement a profitable procedure for you. Whether you have under consideration the purchase of equipment for replacement or expansion, or for a new plant, a C-E Vertical-Unit Boiler will provide the right answer to your particular situation.

The unit illustrated above – and others in the Vertical-Unit line not shown are collectively designed to serve virtually every industrial requirement from about 10,000 to 300,000 (or more) lb of steam per hour, pressure up to 1,000 psi and steam temperatures to 900 F. The entire Vertical-Unit line offers the advantages of time-tested standards of design coupled with that flexibility of application – fuels, firing methods, operating conditions, etc. – required to meet particular plant needs. We shall be pleased to supply catalogs and any additional information required upon request.

B-371-B

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ALL-WEST MEETING

430 REGISTERED -- NEW MgO DATA

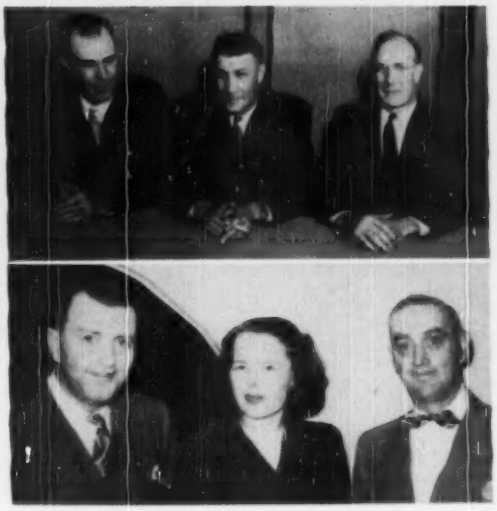
An all-time record for the biggest —and leaders agreed the most successful—Far Western industry convention ever held was hung up when 430 men and women registered for the New Washington Hotel meeting in Seattle May 11-13. About two-thirds were men and the great majority were mill men, who put on the entire speaking and technical program themselves.

Glorious sunny weather from start to finish; a distinguished program, technically and in respect to significant subjects, as well; and first-class entertainment—all these factors combined made it a happy event for the three sponsoring groups —the Pacific Coast division of the American Superintendents, the Pacific Coast section of TAPPI and the Western Branch of the Canadian industry's technical section.

Next Year a "National"

Next year an even bigger meeting looms—the first National Convention ever to be held on the Pacific Coast by the American Association of Pulp and Paper Mill Superintendents. Dates and place—tentatively set—at the Multnomah Hotel in Portland, Ore., June 24-29, 1951.

The Pacific Coast division decided to take on the sponsorship of the 1951 meeting and this decision is tantamount to making it a fixture, because when the Superintendents trustees meet in Chicago in June their approval is expected to be a mere formality.



CHAIRMEN OF THREE GROUPS IN CONVENTION (top row—l. to r.): L. D. McGLOTHLIN, Crown Z., Camas, Superintendents; JOHN GUTHRIE, B. C. Pulp, Woodfibre, Canadian Western Branch, and WALTER F. HOLZER, Camas, retiring TAPPI Chairman.
THERE'S CREDIT FOR MANY FOR A SUCCESSFUL MEETING, especially these: Lower row (l. to r.): GORDON ANDERSON, Puget Sound Sheet Metal Works, Seattle, Chairman of Housing and Registration; MRS. CARL CASTLE, who assisted in registration and is wife of Mr. Castle of Dow, who was Publicity Chairman; and A. C. "ACE" McCORRY, Pulp Supt., St. Regis, Tacoma, General Convention Chairman.

Coast Superintendents' Plans

At their business meeting, the Coast Superintendents, began laying plans for the National Convention of their group, set for Portland, Ore., June 24-29, tentatively at the Multnomah hotel. They also decided they would have only a one-day meeting this fall, instead of the usual three-day, so they could devote more energy and time to making the "National" a success.

Tentative date and place of the Coast Superintendents 1950 Fall Meeting—Tuesday, Dec. 5 at Longview, Wash.

The Seattle meeting was the first ever sponsored by all three Pacific Coast groups, and there is no doubt they are keen to make it an annual event, whenever possible, to supplant the former spring meeting which had been held only by the two American groups. With the Superintendents heading west en masse in '51, it looks like it will be 1952 before another is held.

Here are some of the figures on Seattle attendance—believed to be among the highest ever counted for industry meetings anywhere outside of the national events:

At the final banquet and ball, 375.

At the "Wake-'Em-Up" 8 a.m. (repeat —8 a.m.) breakfast, entertained by the International Brotherhood of Migratory Peddlers, Seattle Waiting Room No. 2, 206.

At the previous (Friday) night get-together and dance, 253. At the men's luncheon, 202.

Dr. Allen's Address

At the exclusive men's luncheon, those in attendance had the rare treat of hearing a man who has been very close to the national defense establishment all around the world—and in a highly responsible capacity—speak on the security of the U. S. and Canada, probably the foremost concern of everyone who heard him. The speaker, Dr. Raymond B. Allen (right), president of the University of Washington, who recently completed a tour of the world as the director of medical services for U. S. Armed Forces, said, simply this: "We are secure, believe me. But, unless we can put enough backbone in our congressmen so they will stand up against pressures, we are going to wreck this country. That's what the Kremlin expects and wants. We are at war now—not a cold war, either—and if they win this war on the economic front, there won't be any need of a shooting war—we will already have lost it. But we can win this war without shooting if we act upon our beliefs."

Another Allen commentary: "A natural resource is nothing until someone with management ability puts it to work."

Speaking of the tens of thousands of dollars given to the University of Washington state sulfite mills in an effort to solve stream problems, he said: "You gave us the money. You define the problem. You publish the findings."

He complimented the industry on its practical application of co-operation through sharing of the knowledge of new methods and processes among competing mills, and said that this co-operation, coupled with opportunity to the individual in thought and action, comprised democracy's "secret weapon" against the forces of totalitarianism.

Proxy Reese of Supts.

Charles H. Reese, national president of the Superintendents and vice president in charge of manufacturing at Nekoosa-Edwards Paper Co., Port Edwards, Wis., was introduced by Charles E. Ackley, paper mill superintendent, Crown Zellerbach, West Linn, Ore., who takes over Mr. Reese's mantle as chieftain of the Superintendents at their national convention in June in Chicago. Mr. Reese also praised the Coast industry's cooperative spirit.

Not at the luncheon, but at the earlier Superintendents' business meeting he told how he had visited most of the Superintendents' divisions of the country, from Maine to Midwest, before heading for Seattle, and found a welcome and spirit second to none in Seattle. He was highly complimentary to mill men for putting on the entire Seattle program themselves, without calling on equipment

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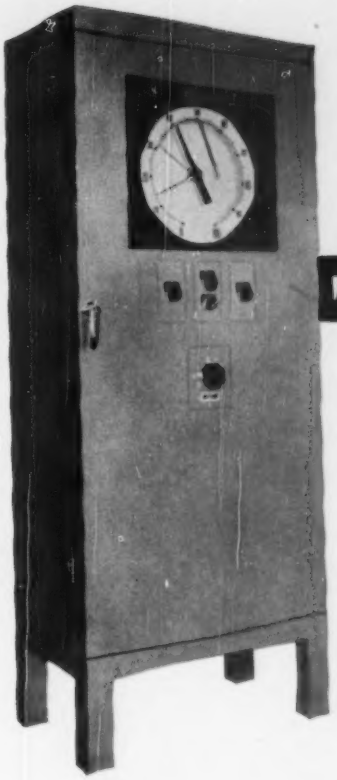

PAPER—*made of perfectly prepared stock—can be spoiled in your dryer! To* help control this critical process, more and more mills have turned to continuous automatic measurement of moisture.

The highly visible, highly responsive Electronic *Moist-O-Graph* keeps pace with machine speeds up to 2000 ft./min. With its help the machine tender can minimize breakage, faulty finish, wrinkling and weight loss. Chipboard . . . coated stock . . . Kraft . . . book paper . . . these are only a few of the many types whose moisture can be measured. The *Moist-O-Graph*'s five-way selector permits rapid shifting to the proper range. The required number of detectors can be used to measure moisture-content at different locations in the machine as well as across the width of the web. Signal lights indicate variations beyond desired limits.

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Why not make *Moist-O-Graph* records the final stamp of quality on your finished reels? Call in your local Honeywell engineer for further information . . . he is as near as your phone.

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SVARRE HAZELQUIST (left), of Weyerhaeuser, who presented paper on MgO Recovery, in which CHARLES E. ROGERS of Babcock & Wilcox collaborated, and DR. JOSEPH L. McCARTHY (right), University of Washington, who reviewed sulfite liquor processing schemes.

or supply men for any of the papers or talks.

Canadians in Important Role

Canadians took a prominent role in the luncheon and Dr. Allen also complimented them. In fact, John Guthrie, chairman of the Canadian Western Branch, who is Woodfibre, B. C., superintendent, chairmanned the lunch, and introduced Douglas Jones, recently appointed executive secretary of the technical section, CPPA, of Montreal, who extended greetings to the meeting from Eastern Canada, which he said was represented at the conference by six delegates, including A. E. H. Fair, president of Alliance Paper Mills.

New MgO Figures Revealed

Unquestionably, the most important single event of the technical and operational meetings was the announcement of new data on the pioneering MgO sulfite recovery process now in its second year at the Weyerhaeuser mill in Longview, Wash. This was presented at a meeting presided over by R. I. Thieme, new Coast TAPPI chairman and Soundview technical director, in a paper prepared by Svarre Hazelquist, technical director at Longview, and Charles E. Rogers, development engineer of Babcock & Wilcox.

They revealed an "economically attainable" recovery at the Longview mill, determined by a recent survey, of 70% sulfur dioxide and 88% magnesium oxide, and fuel values achieved capable of generating 9,000 lbs. of steam per ton at 621 psi and 715°F. Their complete paper is published on preceding pages in this issue of PULP & PAPER, and the data they presented show considerable successful advance over the preliminary plant results which were reported at the TAPPI meeting in Portland, Ore., last fall, and at Montreal last January. The authors stressed the point that each mill presents its own distinct problems and possibilities—their recoveries and use could be less or greater than Longview.

At this session, Dr. Joseph L. McCarthy, department of chemistry and chemical engineering, University of Washington, analyzed some sulfite waste liquor processing schemes and his subject matter and general conclusions were substantially similar to those expressed in the article by J. Richter Salvesen, Marathon Corp., published in PULP & PAPER, May 1950, page 68, and in the report before the United Nations by Dr. Walter F. Holzer, assistant research director, Crown Zellerbach Corp., published in PULP & PAPER Oct. 1949, page 27.

Dr. McCarthy presented a resume of laboratory investigations of various suggested means for sulfite recovery and use, from complete chemical and heat recovery through partial gradations to production of saleable by-products. He spoke of steam and chemical recovery and re-use in the mill as feasible; yeast and alcohol production as promising, and most by-products as having limited markets and requiring more usage development. He concluded that processes such as magnesia or ammonia base for in-mill use could only be decided upon for each mill on the basis of an individual economic study of the mill.

Superintendents' Papers

In their portion of the program, the Coast Superintendents division, with Les "Spud" Hartman, maintenance superintendent at the Everett mill, Weyerhaeuser Timber Co., in the chair, presented three interesting and practical papers.

E. P. Barthelemy, assistant superintendent of the tissue division, Crown Zellerbach Corp., Camas, Wash., presented a detailed outline as practiced in his mill of the duties and responsibilities of supervisors—right down the line to machine tenders and backtenders.

"The day of the old hard-boiled papermaker boss is gone," he said. "In his place is the skilled technician, the personnel counsellor, and the salesman"—the supervisor must be all three of these personalities combined in one person. He must "sell housekeeping, safety, quality and production," according to Mr. Barthelemy. His documented paper, slightly abridged, is presented on these pages.

H. Radford Russell, assistant superintendent, Everett Pulp & Paper Co., presented a description of experiences in developing what he called "pre-conditioning" of printing paper at his mill, which should be of great value to manufacturers of book and magazine printing papers. Development of high speed processes in multicolor lithography brought about a problem of adequate moisture content in the sheet.

The Everett mill's answer is to precondition its paper before shipment in cycle conditioners built by J. O. Ross Engineering Co., with a cooling chamber and a hot humid chamber through which paper successively passes four times, moisture being formed according to same process that creates dew, and it is cooled to retain the moisture. Mr. Russell's article follows this main review in this issue.

Walter C. Jacoby, technical supervisor, Crown Z, Camas, outlined the 17-year growth of the world-renowned Crown Willamette Paper School. Details about this school have been previously published in various articles in this magazine. In our May issue, page 48, is the story

PROGRAM PARTICIPANTS:

Top row shows the authors who gave papers in the Superintendents session and their moderator (l. to r.): LES "SPUD" HARTMAN, Weyerhaeuser, Moderator; E. P. BARTHELEMY, Crown Z, Camas; RADFORD RUSSELL, Everett Pulp & Paper; WALTER C. JACOBY, Crown Z, Camas. Next row, the three Canadians who gave papers (left to right): A. ROY FERGUSON, Pacific Mills; DR. C. B. PURVES, McGill University; D. L. STEWART, Powell River.

Names Suggested for New Industry Meeting in West

It probably won't be till 1952—owing to National Superintendents meeting in Portland, Ore., next year—before the three Pacific Coast associations can join again in a three-way meeting which they hope to perpetuate annually, with meetings alternately in British Columbia and on the U. S. side.

That gives the sponsors lots of time to drum up a catchy name phrase for it. Carl Castle, publicity chairman, suggested WIMPPI—standing for Western International Meeting of the Pulp and Paper Industry—and all registrants were directed to make their checks out to simply "WIMPPI." This was done and the bank accepted them, of course.

William Bond Wheelwright, well known writer and advertising agency man in the New England segment of the industry, has suggested "Pan Pacific Pulp and Paper Parley"

Joe McQuaid, golf chairman, came up with the idea of entitling his event the "WIMPPI Golf Tournament" at Inglewood, and on the poster listing prizes has a drawing of the famous cartoon character with the yen for hamburgers, named Wimpey.

No one seems to feel any urgency about settling on a name—but one is needed because the names of the three sponsoring groups are so long as to be cumbersome.

Lyddon & Co.

exporters of
wood pulp to all
world markets

Parsons & Whittemore

paper exporters
wood pulp

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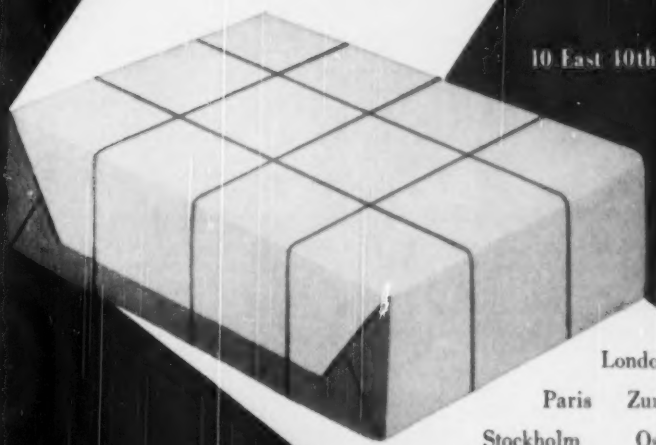


London
Paris Zurich
Stockholm Oslo
Sousse Montreal
Buenos Aires
Sao Paulo

THE MIGRATORY PEDDLERS, Seattle Waiting Room, were ready to put on their show at the Wake 'Em Up Breakfast when this picture was snapped. At right—the "Korn-Airs" of Seattle, a barbershop quartet, which took part in the show.

of this year's school term and graduation. Mr. Jacoby told of methods of instruction, selection of staff, students, examinations, etc. Over 2,366 employes of Camas and West Linn mills and other C-Z divisions have completed one to four years. He emphasized the purpose was to train employes in management as well as technical matters, to give them broader training, and prepare them for advancement. The 34 superintendents and foremen selected as instructors learn and "refresh" their minds along with students, he pointed out.

In conclusion, Mr. Jacoby pointed out that inquiries about the school have come from all parts of the world and its textbook, "Making Paper," by A. G. Natwick, Ed Nunn and M. K. Rawlings is "found in all progressive libraries," and cited the credit acceptance from the school in several colleges and universities.

Mr. Natwick, dean of the school since its inception and assistant resident manager at Camas, was praised for the long hours of planning and work and "untiring efforts" he gave to develop the school —"he provided the motivating influence that made the school possible, it is he to whom the greatest single credit for the current world renown of the school should go," said Mr. Jacoby.

Canadian Papers

The Canadian group put on the third and last technical session, chairmanned by Gil D'Aoust of Powell River Co. Roy Ferguson, assistant to management, Pacific Mills, Ltd., Oceans Falls, B. C., formerly groundwood superintendent, led off with a paper on Cowan screens; D. L. Stewart, research department, Powell River Co., described heat transfer effect of hot moist air from a spray tower on paper machines, and D. C. B. Purvis, of McGill, on his first western visit, described the functions of the Pulp and Paper Institute of Canada, in Montreal.

Several months ago PULP & PAPER reported the erection of a 50-foot spray tower as a part of the heat recovery system for No. 5 machine at Powell River Co.'s newsprint mill. It was the purpose of D. L. Stewart's paper to tell about the performance of this tower, and he did so in an impressively comprehensive paper of more than 25 pages, liberally documented with charts and calculations.

Spray towers may be used to recover waste heat from hot moist air, such as that exhausted from the drier hood of a paper machine whenever the hot water obtained can be used to advantage in the process. At Powell River it was planned to use spray tower effluent in place of cold water for showers on the paper machines and in the groundwood mills: it is expected that the resulting increase in headbox temperature will permit increased production and reduced steam consumption. These savings could be experienced by any mill where groundwood from western hemlock must be washed following zinc hydrosulfite brightening since the grinder heat is lost in the washing process.

Mr. Stewart pointed out that unpacked spray towers in the form of tall stacks through which the air rises against the falling water spray have certain advantages over the wooden slat-packed towers more commonly used for exchanging heat between air and water. They are lighter in weight and offer less resistance to the air flow.

If the heat recovery system is completed as planned, two towers will be installed for each of the three high-speed news machines. The fourth machine, Powell River's new No. 8, has spray banks built into the economizer system and will supply somewhat less hot water than each of the other three. Each tower is to have an individual temperature controller which regulates the flow of cold water to give a constant outgoing water temperature. The water from all units is to be collected in an air separating tank and part pumped to the paper machine showers. Cold-water make-up would be added by a float control if not enough hot water were available, and steam would be added by a temperature controller if necessary to keep the shower hot water temperature from dropping.

"The results indicate that spray towers provide a satisfactory and economical means of recovering heat from paper machine exhaust," said Mr. Stewart. "However, the heat transfer efficiency per unit volume appears to drop as the height increases, and it is probable that equipment could be designed which would give greater heat recovery with no increase in volume. A counter-current system is necessary if a high water temperature is desired, as otherwise the hot water

R. J. LeRoux Initiated Into Migratory Peddlers

Russell J. LeRoux (left), pulp mill manager, Weyerhaeuser Timber Co., Everett, Wash., was honored at the Seattle convention by being initiated as an honorary member of the International Brotherhood of Migratory Peddlers, Seattle Waiting Room No. 2.

He survived the usual buffoonery and horse-play in the ceremony staged at the "Wake-Em-Up Breakfast," and, of course, behind it all was the serious tribute in his selection for the honor as a man who has encouraged and abetted cooperative and progressive activities of mill men through their various associations.

L. K. Smith, a past president of W. R. 2, Bill Clines, the present president, Joe McQuaid, the vice president, and Gerry Morrell, the secretary, were the principal participants in the initiation, although the entire W. R. 2 took part, and besides, had a first class barbershop chorus, the "Korn-Airs" of Seattle, to help them out with some close harmony. Everyone present seemed happy that he got up for the early breakfast—no matter how hard it was to do.

Mr. LeRoux went to Everett about ten years ago and later became manager. Last fall he was co-chairman with A. G. "Buff" Natwick, another honorary member of the Peddlers, of the big National Fall Meeting of TAPPI in Portland, Ore. A recent community tribute to Mr. LeRoux was his election to the presidency of the Chamber of Commerce of Everett.

Mr. LeRoux grew up in Wisconsin Rapids, Wis., where he went to high school and played football. After attending Marquette University and the University of Wisconsin, he became superintendent of the Interlake mill at Appleton of Consolidated Water Power & Paper Co. He left there to go west. He was back in Wisconsin for a brief interval as a mill general manager, but returned to his Everett post later. His father, Levi LeRoux, is retired manager of the Brainerd, Minn. mill of The Northwest Paper Co., and a brother is an engineer with that company.

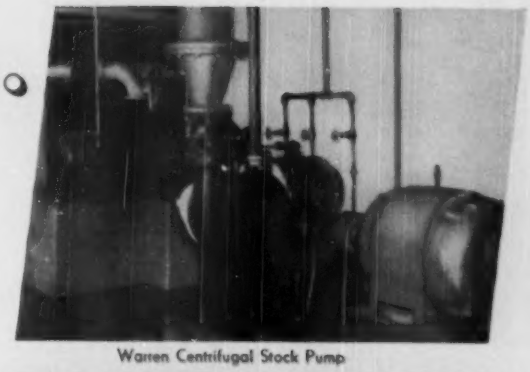
Migratory Peddlers Song*

P is for the Peanuts that they pay us
E is for the eggs we have to dodge
The *D*'s are for the Duties which dismay us
L is for our Loyal Little Lodge.
E is for the Energy we're known for
R is for the Rubbish that we sell.
Put them all together, they spell PEDDLER
The Brotherhood we love so well.

*This was sung to tune of "Mother" by the Barbershop Quartet—"Korn-Airs" of Seattle, leading the Seattle W. R. No. 2 of I. B. of M. P.

QUALITY..

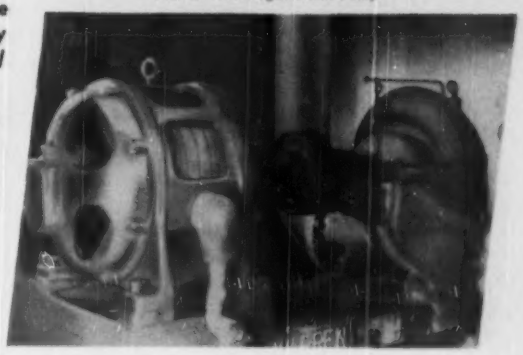
is the watchword



Warren Centrifugal Stock Pump

at Gulf States Paper Corporation, Tuscaloosa, Ala., and on this basis an enterprise founded decades ago has shown healthy growth, resulting in the present expanded capacity of 350 tons daily.

Quality is the watchword at Warren too, along with specialization in the Pulp and Paper Mill field . . . and, here again is a story of steady progress going back to the year 1897, when the first Warren Pumps were built. We are proud of the fact that it has been our privilege for the

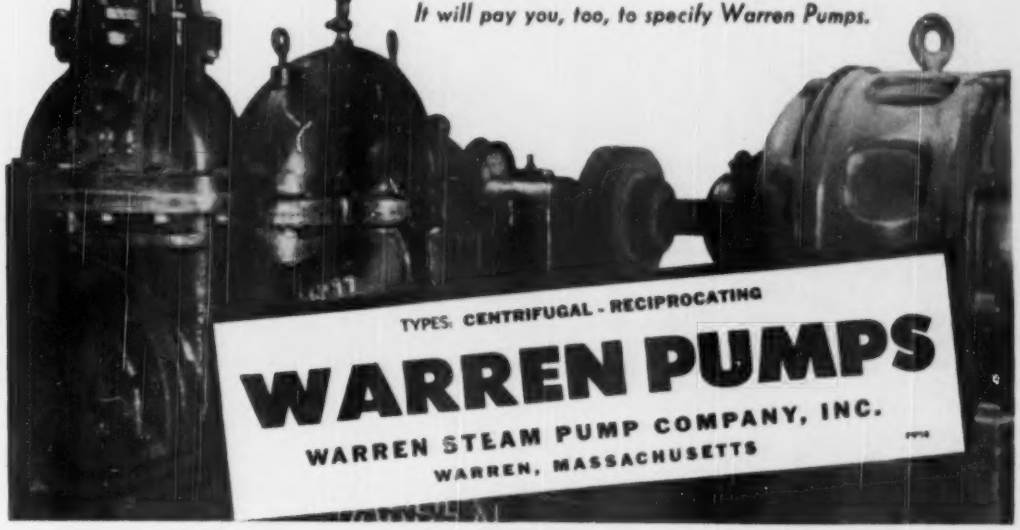


Mill Water Supply

Plant Fire Pump

past several years to have supplied Gulf States Paper Corporation with a substantial number of Warren Pumps. These include pumps for pumping stock of various consistencies and at various stages of operation; also for handling black, white and weak liquors, general water service and boiler feed, etc.

It will pay you, too, to specify Warren Pumps.



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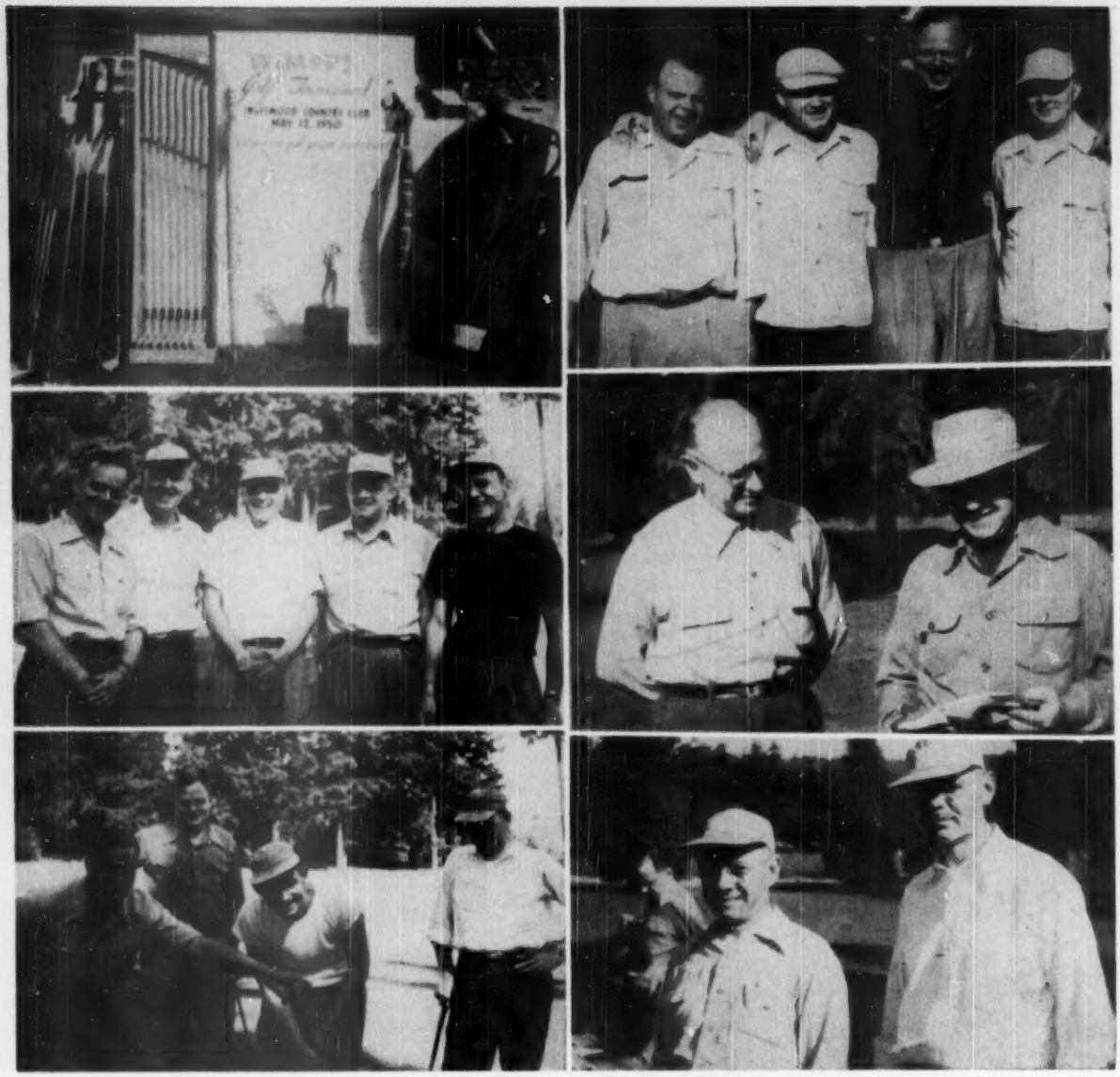
WARREN STEAM PUMP COMPANY, INC.

WARREN, MASSACHUSETTS



GOLF WAS AT INGLEWOOD course in Seattle for the convention delegates. Top left shows some prizes, the trophy and sign listing prizes. On sign is a drawing of "Wimpey" of the cartoons—the convention was called, unofficially, WIMPPI (Western International Meeting of the Pulp and Paper Industry).
Upper right (l. to r.): Jack Wilcox, Esco; LeRoy Shanaman, Penn Salt; Harris Fenn, National Aniline; and Carl Fahlstrom, Asst. Mgr., Longview Fibre.
Middle row (l. to r.): Ben Natwick, Appleton Wire; Walt Salmonson, Draper Felts; Merritt Kaphingst, Pulp Supt., Columbia River Paper Mills; Fred Gillmore, Asst. Supt., Puget Pulp; Herb Beck, National Aniline; Jeff Smith, Dow Chemical Co., and Phil McGuire, Oliver United.
Lower row: Tom James, Flox Co.; Oliver Ranken, Shift Supt., Soundview Pulp; J. L. McClintock, Project Chemist, Weyerhaeuser; Irwin Thieme, Tech. Dir., Soundview; and Charles Stehman, Master Mechanic, and James Hodson, Chief Electrician, both of Soundview.

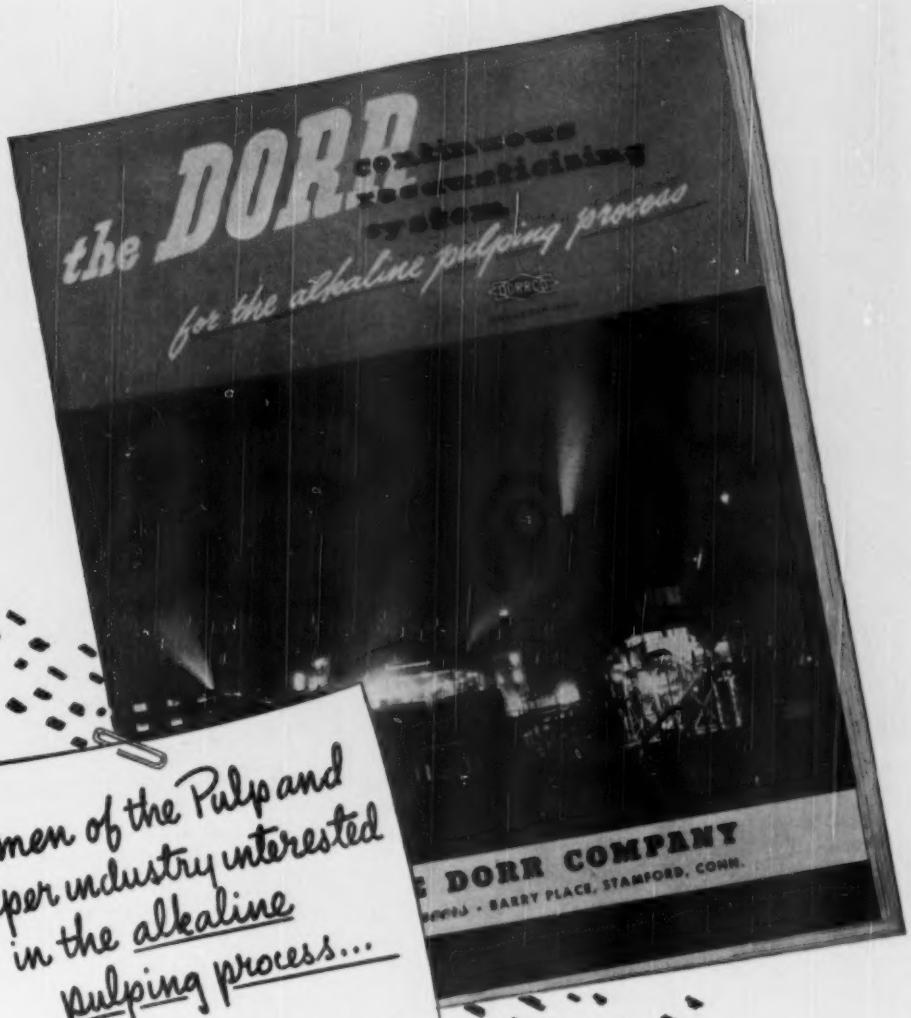
temperature must be lower than the outgoing air temperature. A suitable unit might be a long horizontal spray chamber of fairly large cross-section, with the cold water sprayed from the top at the end where the air is exhausted. The water would be re-circulated through several stages until it would finally be collected at the end where the air is admitted."

A. R. Ferguson of Pacific Mills told the conference how installation of Cowan screens in the groundwood mill at Ocean Falls, B. C., had been a factor in improving production.

He said that for several years increased demands on the paper machines had overtaxed the groundwood screen room and that as a result it was found necessary to modernize the process. The screens formerly in use could not be brought up to the required standard, so a new Cowan screen fitted with .065-.055 monel plates was purchased experimentally to provide data as to capacity power requirements and stock cleanliness standards. Later, .065-.060 lithcoted plates were ordered for the two new screens.

In addition to the need for producing more pulp it was essential that closer control of stock quality be maintained as to freshness and strength and fibre fraction distribution. Importance of clean logging and utilization of everything usable from the woods made it more difficult to obtain a satisfactory grade of pulp consistently. The woodroom, for instance, received partly decayed, soft and over-mature spruce and hemlock as well as hard, dense wood.

The setup in the groundwood mill was now considered quite flexible, with the three Cowan screens, two secondaries



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ONLY THE McCULLOCH 3-25 HAS ALL THESE FEATURES

Weighs only 25 lb., complete with 18" blade and chain... Develops 3 hp...Automatic clutch...Built-in chain oiler ...Full-power sawing at any angle...Kickproof automatic-rewind starter...accessible ignition points...one-hand controls.

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20-inch Blade – $385.00 • 30-inch Blade – $395.00 • 40-inch Blade – $405.00
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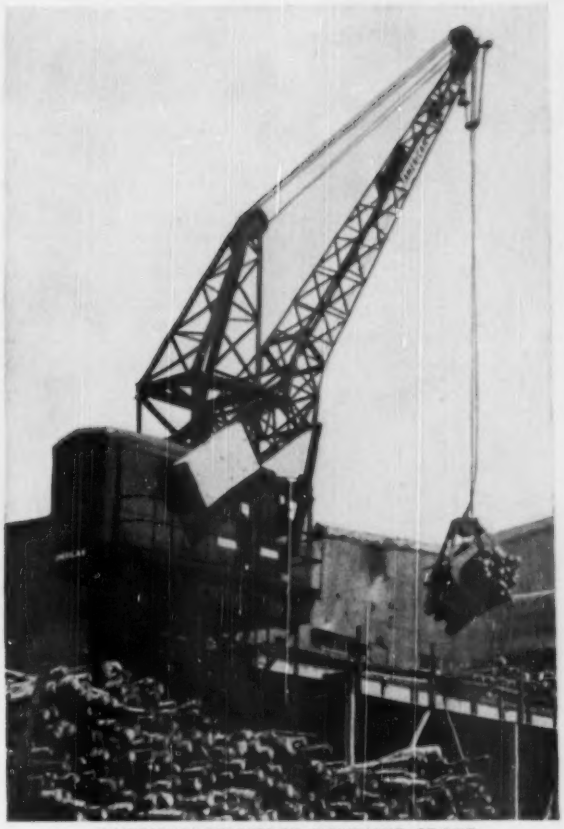
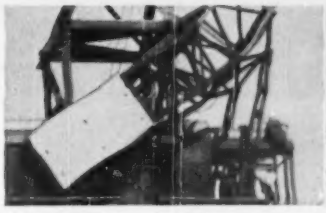


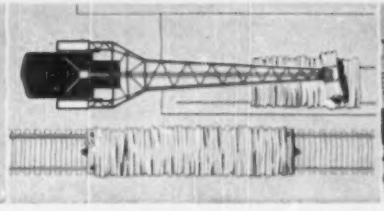
AMERICAN PULPWOOD HANDLING CRANE

There's nothing else so safe...so smooth... so precise...for pulpwood handling!

Touch just one lever . . . the boom swings smoothly up or down . . . but the load of pulpwood in the grapple moves toward you, or away from you in a horizontal plane! That, in simplest terms, is the amazing difference in the American Pulpwood Handling Crane. Super-live, super-safe boom action makes it a wonder worker for fast, accurate, low-cost pulpwood handling. If you are in a tight spot—literally or figuratively—this great new crane can speed your work, cut your costs. Mail the coupon below for detailed information.



COUNTERWEIGHTED BOOM. To raise or lower boom, only enough power to overcome inertia is needed. You "travel" and "spot" the load by this free booming action alone!



IN CLOSE QUARTERS, the use of a crane involves up-and-down boom action. The American Pulpwood Crane can provide this accurate spotting with *absolute safety.*

RAPID BOOM ACTION swings boom through its full arc in 15 seconds. *Boom cannot be dropped, over-raised or over-lowered.* It reverses automatically at end of arc.

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Please send information on the American Pulpwood *Handling Crane.*

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JOHN GUTHRIE, (center), Pulp Mill Superintendent, British Columbia Pulp & Paper Co., at Woodfibre, B.C., was reelected Chairman of the Pacific Coast Branch, Technical Section, CPPA, during the Tri-Association conference of the industry in Seattle, and MORLEY PATTERSON, (left), Kraft Mill Superintendent, Pacific Mills, Ltd., Ocean Falls, is the new Vice-Chairman, succeeding Don J. McLaurin, formerly of Powell River Co., who recently went to the Institute of Paper Chemistry at Appleton, Wis. A Second Vice-Chairman will be subsequently chosen. W. R. DICKIE, of A.I.M. Steel Products Co., Vancouver, B.C., continues as Secretary Treasurer.

OLD FRIENDS GET TOGETHER AT SEATTLE (l. to r.): W. A. BAIN, Res. Engineer, B. C. Pulp & Paper Co., Woodfibre; R. H. R. YOUNG, Mgr. of Mfg., Pacific Mills, Ocean Falls, B. C.; A. G. NATWICK, Asst. Res. Mgr., Crown Z., Camas, and A. E. H. FAIR, President, Alliance Paper Mills, Toronto. Years ago at Merriton, Ont., Mr. Natwick, Gen. Supt. there, gave Mr. Fair his first boost up executive ladder, to Paper Mill Supt.

MORE CONVENTION golfers at Inglewood:

AT LEFT (l. to r. standing): Bill Kay, E. J. Bartells Co.; Eddie Cavanaugh, Plant Engineer, Fibreboard Products Inc., Port Angeles; Bob Goodell, Bartells, and (kneeling in foreground taking scores): Bob Holcomb, Pulp Supt., Fibreboard, Port Angeles.

AT RIGHT: A pair of ladies' golfers were Mrs. Paul (Sylvia) Eschner (left), wife of St. Regis Asst. Chemist, Tacoma, and Mrs. A. C. (Cora) McCarry, wife of the General Chairman of the Convention and Pulp Supt. at St. Regis.

and a third screen providing close control of quality and cleanliness. Rejects averaging 2 percent were pumped to the sliver storage pits.

Stainless steel piping and stock flumes together with a protective coat of Paravar on the decker vats and flow boxes compensate to some extent for increased dirt due to closer screening, said Mr. Ferguson.

Of the 21 grinders in the Ocean Falls groundwood mill 18 are driven by water wheels and three by 2500 hp. synchronous motors. The normal wood load averages 14,500 KW with peaks of 16,000 KV. Steam power is costlier than hydro.

Minor modification in stone sharpening technique will allow further reduction in the number of tailing screens required, he added.

At present there is a good market for sliver grades of paper produced at Ocean Falls, but if this slackens off or excessive power costs dictate maximum conversion to news grade pulp, Pacific Mills will have no alternative but to refine the rejects. Clean wood would then be essential, and this would probably call for hydraulic barking—a development which the company now contemplates.

Dr. C. B. Purves of McGill University, Montreal, an authority on industrial and cellulose chemistry, described in some detail the purpose and functions of the Pulp and Paper Institute of Canada, which is maintained jointly by the university, the Canadian government and the industry. As a result of the recent appointment of Dr. L. Thiesmeyer as president of the institute, the scope of the program and its integration with industry were being extended, he said.

Research effort, Dr. Purves believed, could be improved if industry in setting its task would be more specific as to the relative economic importance of the results to be achieved, because it was not within the sphere of the research man to judge the value of a development in dollars and cents.

DUTIES OF SUPERVISORS

Foreman's Responsibility Outlined

By E. P. Barthelemy

Asst. Supt., Tissue Division, Crown Zellerbach Corp., Camas, Wash.

Not long after the war our company, like others, was faced with the necessity of faster running, more test requirements, better quality or, to sum it up—more and better paper at less cost—with help who, instead of learning the trade step-by-step, had been spearheading with Uncle Sam for our protection. Uncle Sam made seniority compulsory, and rightly so, but it created a situation which had no precedent. Men who had been fourth hands came back from war to find themselves backtenders, etc. Something drastic had to be done. Crown Zellerbach's answer was Job Instruction Training.

An intensive program was mapped and followed. It was agreed a definite line of authority was necessary, adhered to rigidly.

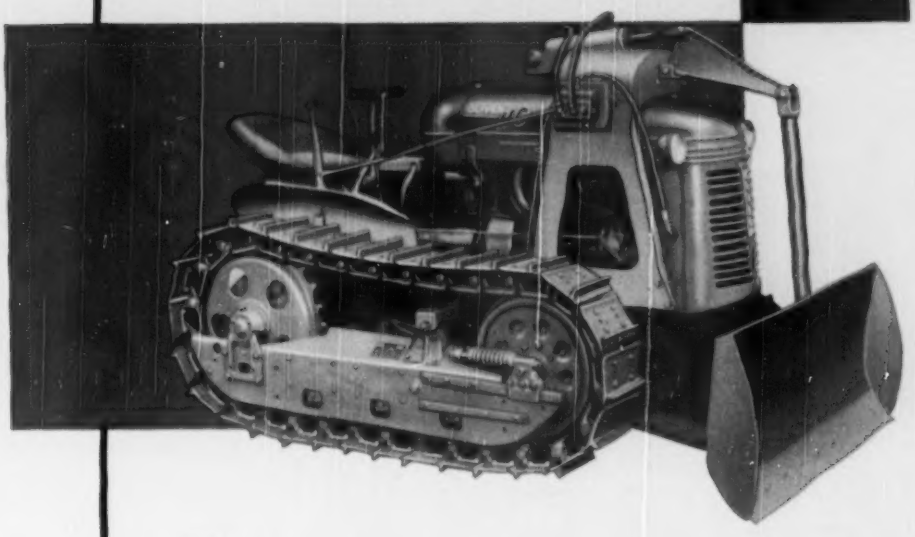
The duties and responsibilities of the foreman were studied and a training course adapted.

The foreman's duties are:

1. Check with machine crews and inspect clothing for defects.
2. Inspect and report condition of equipment to superior.
3. Keep men working at their jobs.
4. Take necessary action to keep department clean.
5. Sew wires and felts.
6. Check orders to see that machines are running to specifications.
7. Check roll finishing for appearance.
8. Check to see that all jobs are manned.
9. Check to see that machines are running proper speeds.
10. Check to see that quality is up to standard (by personal observation of product and by reviewing test sheets).
11. See that finishing materials are available.
12. Check with beater room foremen on stock (furnish) supply and changes.
13. Maintain discipline and enforce observance of mill rules.
14. Mark up time on I.B.M. cards.
15. Make out B.M.T. reports and population reports.

More strength . . . **More** power . . . **More** everything

..in the NEW OLIVER "HG"



There's *more* of everything you want in a crawler tractor in the NEW Oliver Model "HG." This new little crawler tractor is "big" with performance-making features because it was *field designed* . . . designed to meet the specifications that users said they wanted.

The NEW OLIVER "HG" Has More Strength

To handle the extra load and strains of mounted equipment, the main frame, transmission case and drawbar bracket assembly have been materially strengthened. No loads are imposed on final drive spacer casting. Power take-off is heavier . . stronger.

Front wheels have been increased 50% in material thickness for longer life. Wheel flanges are on the outside of the track rails for better track alignment. New, heavier type track frame guide supports and buffer springs add strength to handle mounted equipment.

Final drive has been redesigned for greater physical strength and durability.

The NEW OLIVER "HG" Has More Power

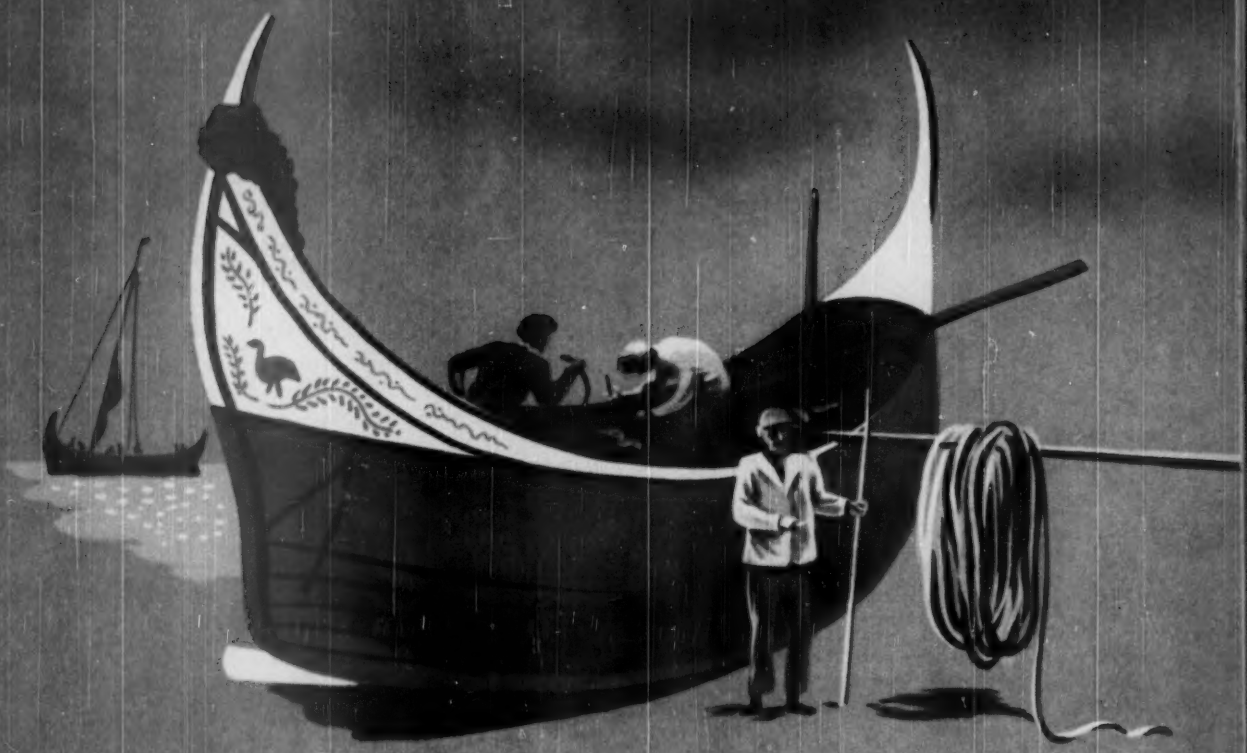
The new "HG" engine gives you more drawbar horsepower . . . extra power to handle bigger loads . . . extra efficiency.

Check the new Oliver "HG" at your Oliver Industrial Distributor's now. It's the biggest little tractor you've ever seen.

THE OLIVER CORPORATION

Industrial Division: 19300 Euclid Avenue, Cleveland 17, Ohio

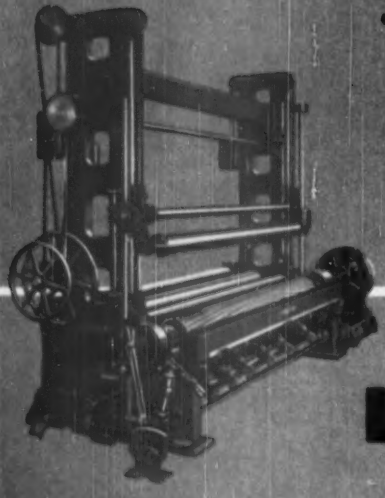
A complete line of industrial wheel and crawler tractors



a QUINTAL of Sardines?

In Portugal you'd get 28 lbs. more than in the Spanish quintal—and that's a mess of sardines. So with slitters; we believe the values in Langston Slitters and Roll Winders are greater than can be found in any other. Try a Langston "quintal".

Samuel M. Langston Company,
Camden, New Jersey.



SLITTERS

Langston

ROLL WINDERS

16. Watch for unsafe practices and conditions. (Enforce safety rules.)
17. Talk safety to all employes.
18. Properly induct new men into department and see that they are properly instructed on job.
19. Supervise clothing changes. (Arrange for men and equipment, plan and direct work.)
20. Control costs. (Minimize overtime, call time, meals, waste of materials and work.)
21. Check losses—act to minimize them. Watch for leaks, check charts. Receive reports of filterman.
22. Requisition supplies and materials; also meals.
23. Order and supervise repairs on night time breakdowns.
24. Notify necessary maintenance personnel of emergency breakdowns. Order and supervise emergency maintenance.
25. Arrange needed aid for injured men.
26. Advise superior of major emergencies.
27. Refer questionable cases of call time, etc., to superintendent.
28. Check machine operation with machine tender.
29. Inspect working area for equipment or product damage.
30. Develop machine tenders and see that crews are properly trained.
31. Make emergency changes in crews.
32. Evaluate new men and make recommendations to superior.
33. Oversee and coordinate wash-up and grade changes.
34. Order machine shutdown for any cause which warrants action.
35. Contact assistant superintendent for decision as to major shutdown.

The supervisor of a department is on the first rung of the executive ladder. He is a leader and must be able to interpret his company's policies and rules in such a way as to inspire loyalty. He must have ability to handle unexpected situations as well as the routine work. He must be willing and able to accept full responsibility for his actions and decisions and never "pass the buck." No employe will give his respect to a boss who does not stand on his own feet. He must check—check—and check some more. Men want supervision—not tyranny. A fault in a supervisor is taking for granted the loyalty, knowledge of the job and work-capacity of an individual. A word of praise will be a stimulus for more effort. When it is necessary to directly reprimand a man, one such reprimand for an offense is all that is required. To repeat the same process only engenders resentment.

You must continually observe personnel actions and take necessary means to correct bad habits or wrong interpretation of rules.

Check to see that all jobs are properly manned and an exchange of "good mornings," on this round is a proper way to start the day. Check all supplies needed in your phase of operation. Watch for unsafe practices and conditions, enforce safety rules and instruct in safe practices. Watch for waste, both in material and labor. See that good housekeeping is practiced. It has been proven that housekeeping has a more direct bearing on phases of our industry than any other one item.

In planning our work practice we went on down the line to backtenders who met with boss machine tenders and laid out their ways of how, why, who and when, on all their duties, such as handling breaks, calenders, slitter setting, etc. Again the best of each method was chosen and adapted. Windermen's duties, starting new men, all came in for study of the best way to do the job better, faster, easier and safer. Briefing sessions of each group were held so that each man knew what was expected of him and a surprisingly large amount of lost movement was eliminated. The result of this study meant that each supervisor must be sure that each machine tender thoroughly understands and follows this course of action:

1. Organize, train and instruct machine crew to obtain maximum quality, production and efficiency.
2. Organize and instruct crew on shutdowns for any reasons, such as wash-ups, grade changes, clothing changes, mechanical repairs and holidays.
3. Operate and care for all machine clothing such as wires, felts, etc., and report to foreman defects that require special repair or renewal.
4. Inspect and report any mechanical defects to foreman; request aid from maintenance for minor repairs.
5. Double check use of equipment, and when misused take necessary action.
6. Double check the sheet produced and rolls delivered and take necessary action to assure the best possible quality and quantity of product.
7. Keep wet end clean and see that the entire machine and equipment is clean.
8. Keep crew practicing safe methods.
9. Operate Mordens and Jordans to obtain best results in finished products.
10. Check for stock losses and take indicated action, including notifying filter operator of faulty operations.
11. Carry out orders or instructions received from foreman.
12. Develop effective team spirit.
13. Make daily contact with each crew member and double check the performance of new employes.

Evaluation of men under his supervision is of greatest importance. Only by evaluation and instruction can an accurate picture of the strength or weakness of a man or team be known, enabling the supervisor to praise strong points, point out and help overcome weak points, build confidence and ability. The supervisor must be a skilled technician—a personnel man—and a salesman. In his triple personality the technician knows how—the personnel man shows how—and the salesman uses his salesmanship to sell housekeeping, safety, quality, production—and thereby job security and the American way of life.

Meet the Committee!

A. C. McCorry, pulp mill superintendent, St. Regis Paper Co., Tacoma, Wash., and vice chairman of the Pacific Coast Superintendents, was the hard-working general chairman of the successful Seattle meeting. Aside from the program itself and the men who arranged that part of it, discussed in the accompanying article, there were some other busy men who shared in making the meeting a great success.

Fred Armbruster, Dow Chemical Co., and secretary of the Coast Superintendents, handled the finances as usual. Gordon B. Anderson, Puget Sound Sheet Metal Works, was "broken in" on one of the toughest assignments—registration and housing chairman.

Bill Clines, General Chemical, and Walt Salmonson, Draper Felts, experienced hands, again handled entertainment; Joe McQuaid and Don Livingston, both of Esco, masterfully ran a smooth golf tournament again; R. M. True, General Dyestuff and TAPPI Coast secretary, took care of mailing and similar detail, and Carl Castle of Dow, handled publicity.

New Machines in Making Reports Tom Scarfone

Tom B. Scarfone, sales engineer for the Pacific Coast Supply Co., Portland, Ore., returned recently from a month in the East, attending a sales meeting of the Cameron Machine Co., and calling on other firms which the Pacific Coast Supply represents in the Far West. These included the Texas Gulf Sulphur Co. and the Multi-Metal Wire Cloth Co. of New York City; Eastwood-Nealley Corp., Belleville, N. J.; Farrell-Birmingham Co., Ansonia, Conn.; Norton Co., Worcester, Mass.; Union Screen Plate Co., Fitchburg, Mass.; F. C. Huyck & Sons, Rensselaer, N. Y.; E. D. Jones & Sons Co., Pittsfield, Mass.; Appleton Machine Co. and Jos. J. Plank & Co., Appleton, Wis., and Horton Manufacturing Co., Minneapolis.

Mr. Scarfone's trip was timed to permit him to check on various new developments which certain of the companies he visited will shortly offer to the trade. Of particular interest were certain redesigned winders which the Cameron Machine Co. now offers and a new jordan known as the Fibre-Master, which E. D. Jones & Sons Company are now making.

PRE-CONDITIONED PAPER

By H. Radford Russell
Assistant Supt., Everett Pulp & Paper Co.

The transition of the process of multicolor lithography from a fine art to a high speed, precision, production process has required the solving of many problems. Today, presses operating at speeds of 4,000 impressions or more per hour put from one to four colors on a sheet of paper bigger than the top of an office desk on one trip through the press. For some jobs the sheets are run through the press several times.

The process presented the paper manufacturer with a number of problems. Adequate moisture content of the sheet was one of them.

Printing paper usually comes from the paper machine with a moisture content of not over 5%. The amount of moisture that a sheet can carry depends mainly on the finish, degree of hydration, amount of calendering, and other factors to a lesser degree. Such paper usually absorbs moisture from the air in the press room and from the moisture on the offset litho press. Absorption of moisture by the paper between colors causes the fibres to expand. This expansion results in a change in the size of the sheet, so that subsequent color will be out of register with the earlier ones. Satisfactory reproduction cannot be obtained unless register is practically perfect.

Lithographers used to condition paper prior to printing by hanging it in racks in their plant. Air from the press room was blown through the suspended sheets so that they would, in a matter of hours, absorb enough moisture to put them in equilibrium with the press room atmosphere. This process was expensive, slow, space consuming, and sometimes inadequate.

The Everett Pulp & Paper Co.'s answer to this problem of its customers is to precondition the paper prior to shipment. This preconditioning is done in what is known as a cycle conditioner.

Our No. 2 cycle conditioner is a transite and steel constructed box approximately 20 ft. long, 16 ft. wide and 10 ft. high. It has two adjoining rooms with an insulated wall between with slots to allow the paper to pass from one chamber to another.

The first is a cold chamber with cool high humidity air blown through trays with ½ in. orifices so that it is vented directly to the traveling sheet. The air is kept close to 65°F. with 75% relative humidity.

The second compartment is known as the conditioning chamber with re-circulated high humidity warm air which is also vented directly on the sheet. This air has a definite temperature and humidity. The temperature will range from 110° to 150° with a constant humidity of approximately 95% depending on the paper to be conditioned or the moisture to be put in the sheet. The high humidity is attained by steam showers in the air stream from the fan and the temperature by a steam radia-

tor. Both are regulated by a constant humidity and temperature recorder controller.

The sheet of paper makes one pass through the cold chamber where it is uniformly cooled and then goes to the hot humid chamber. As the temperature of the cooled paper is below the dew point of the air in the conditioning chamber, moisture condenses on the sheet. The temperature of the sheet is almost immediately brought up, approaching that of the warm air in the conditioning chamber. At this point condensation stops and the sheet then passes back into the cool chamber when the high humidity prevents the moisture on and in the sheet from evaporating. The sheet is also again cooled for another entrance to the conditioning chamber and another flash of condensed moisture. In this operation the sheet makes four passes the cool to the warm chamber. The paper leaves the conditioner by the way of the cool chamber so that it is completely cool and is wound up in a roll of paper with the desired moisture.

At the start of a new run a roll of paper up to 80 in. wide is placed on the unwinding shaft with a manually operated brake. The leading end is threaded through the conditioner and attached to the winding shaft. The winder is driven by a direct current variable speed motor with a Horton Mfg. Co. constant tension clutch.

The air supply is automatically cut off when the paper is stopped.

A calender stack is also lined up opposite the winding stands. It is operated in synchronism with the conditioner when supered paper is to be conditioned.

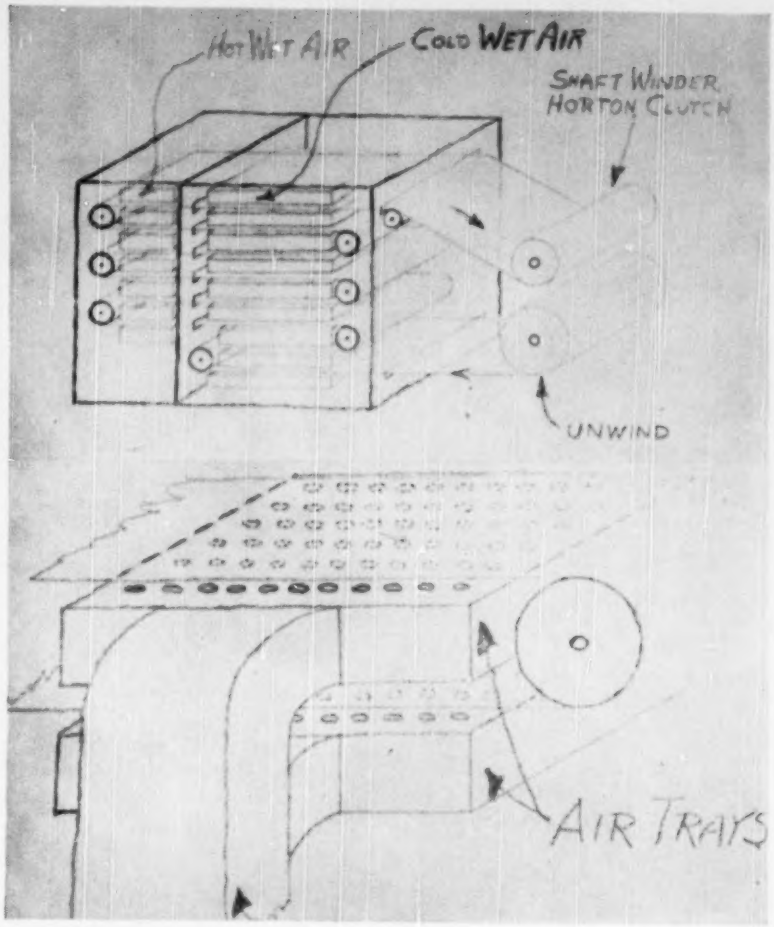
Moisture up to 3% can be added safely and uniformly to our type of paper at speeds ranging from 600 ft. to 1,200 ft. per minute, but is usually shipped with about 5½% moisture.

The adding of moisture to a sheet of paper had long been under consideration at Everett Pulp & Paper Co. Through laboratory experiments an immediate rise in moisture content after a sheet of paper had been cooled and then subjected to a warm humid atmosphere was noted. Repetition of this cycle is the basis of this operation. J. O. Ross Engineering Corp. built our first cycle conditioner in 1938 and our No. 2 conditioner in 1940.

I am indebted to Mr. Anson B. Moody, vice president of Everett Pulp & Paper Co., and to Mr. A. E. Montgomery, vice president of Ross Engineering Corp., for much of the above information.

BEVERLY C. SMITH (right), who has been promoted to Assistant Resident Manager at the Crown Zellerbach kraft mill in Port Townsend, Wash., serving under Res. Mgr. Leo Ziel. He was Technical Assistant to the Kraft Mill Supt. He succeeds Norman Lowthwaite, who takes the title now of Assistant to the Resident Mgr., in order that he may devote his efforts exclusively to special technical problems. Reese S. Kern, former chemist, was promoted to Mr. Smith's former duties.

JOHN "BEN" BECK (left), whose appointment as General Supt., Oregon Pulp & Paper Co., Salem, Ore., was recently announced in these columns. He went west from Hull, Que., where he was with The E. B. Eddy Co., and prior to that he was one of many well known paper men who worked at the Alliance mill at Merriton, Ont. He was born in Toronto.



PRE-CONDITIONING PAPER at Everett Pulp & Paper Co., Everett, Wash. Top view: The cycle conditioner as developed for the Everett mill in cooperation with mill staff by J. O. Ross Engineering Corp. Position of Horton Mfg Co. (Minneapolis), constant tension clutch is shown. Lower view: Shows how the cycle conditioner is equipped with air trays for both the cold chamber and the hot humid chamber.

COAST TAPPI ELECTS THIEME CHAIRMAN FOR 1950-51

Robert Erwin Thieme (left), was elected the new chairman of the Pacific Coast section of TAPPI during the joint meeting held with two other Coast groups in Seattle. He is technical director of Soundview Pulp Co., Everett, Wash., largest sulfite mill in the world.

Eric Ericsson, technical director, Puget Sound Pulp & Timber Co., was elected vice chairman and Robert M. True, General Dyestuff Corp., was re-elected secretary-treasurer.

Other members elected to the executive committee were Fred Weleber, Publishers' Paper Co.; Svarre Hazelquist, Weyerhaeuser; Walter Salmonson, Draper Felts; John McEwen, Weyerhaeuser and national chairman of the TAPPI sulfite committee; Harold Bialkowsky, Weyerhaeuser, national executive committeeman, and Dr. Walter F. Holzer, Crown Zellerbach, who completed his term as Coast chairman.

Coast TAPPI announced plans for a seminar later this year to be conducted, probably successively in Portland and Seattle, by Dr. J. A. Van den Akker, Institute of Paper Chemistry, on the physical aspects of cellulose.

the new CARCO winch fairlead speeds ground skid logging

Carco Fairleads save wire rope and protect winch cases against line cuts. Fairlead assembly can be readily attached or removed.

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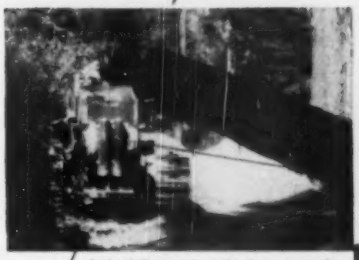

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MgO Recovery

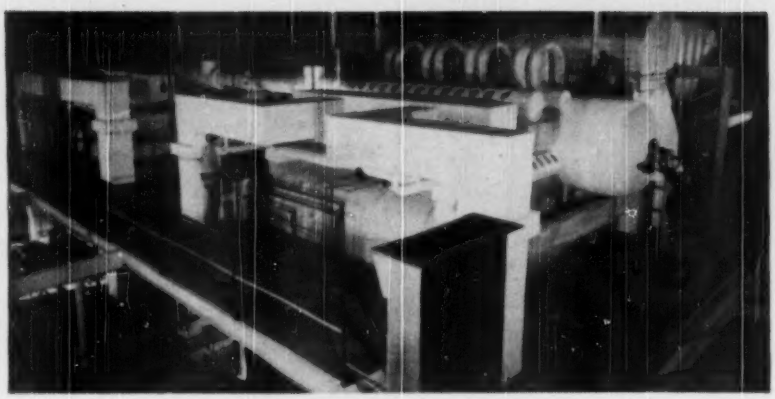
(Continued from Page 39)

units, we will endeavor to present a balance in which all losses have been reduced to economic levels as applicable to the present Longview installation.

Results of Survey Establishes Losses

During the period of March 9 through March 18 of this year, we conducted an intensive survey covering the operation of the magnesium base sulfite recovery system at Longview.

Over this period the plant operated at a rate equivalent to 322 air dried tons of unbleached, unscreened, unknotted pulp per day. The pulp produced during this period had a bleachability equivalent to a permanganate number of 13 as established by TAPPI standards and had the other characteristics required for the production of high quality bleached paper-grade pulp.



THIS VIEW IS FROM ABOVE the two MgO Babcock & Wilcox recovery furnaces at Longview. There is no wall between this plant and the adjoining, much higher plant for the new kraft mill as they operate in a common recovery and power division serving both mills. The MgO boilers (two of them) are 2-drum extended furnace type in contrast to the 70-ft. high vertical kraft boiler. Sulfite boilers are designed for 69,600 lbs. steam production per hour at 615 psi. and 700°F.

The survey included:

(1) Measurement and analysis of the finished acid from the acid plant to the acid storage tanks,

(2) Measurement and analysis of the concentrated "red" liquor to the furnaces which was checked by measuring the flow from weak liquor storage tanks to the cascade evaporators,

(3) Measurement of magnesium oxide and sulfur required for makeup,

(4) Measurement of steam generated by the furnaces and boilers at 621 psig, 715°F., and

(5) Establishment of the losses of total solids from the system, including organics, magnesium oxide and sulfur.

During this survey we compared weak liquor flow to the evaporators with concentrated liquor flow to the furnaces and these when checked against steam produced established that during this period there were 2100 pounds of total solids per air dried ton of pulp available for burning in the furnaces.

In addition to this we found that during this period we had lost the following quantities of solids per ton of air dried pulp at pertinent points in the system.

SOLIDS LOSSES PER TON OF PULP (IN LBS.)

	Organics	*MgO*	*Sulfur*
Vents at Dump Tanks			4.0
Knotters	6.0	0.5	0.7
Pulp leaving 3rd Washer	73.1	8.7	13.0
Evaporators—			
Acid Condensate	9.3	0.6	0.8
Evaporators—			
Jet Condenser	150.0	17.8	17.7
Acid Settling Tank		0.2	0.1
Backwashing acid filters		2.5	6.0
Sewer	9.0	4.1	1.1
Total known losses	247.4	34.4	43.4

Over this period it was necessary to add 36.9 pounds of magnesia and 90 pounds of sulfur as makeup per A. D. ton of pulp, and also there was an inventory change at various storage tanks which was equivalent to adding 2.1 pounds of magnesia and 3.7 pounds of sulfur per ton to the system. This inventory change

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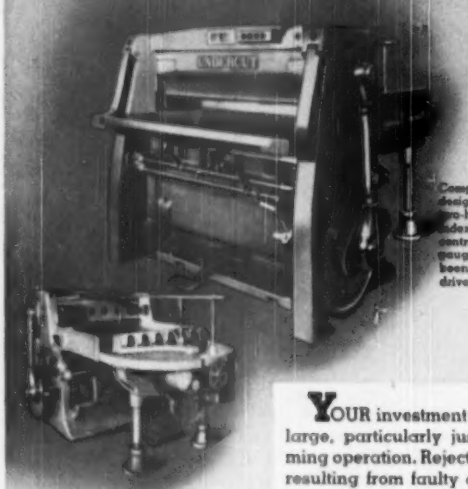

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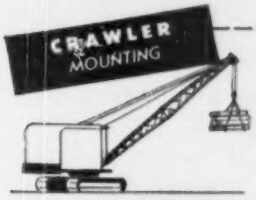

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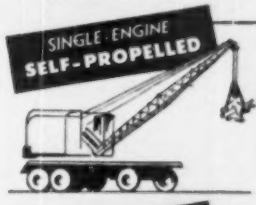

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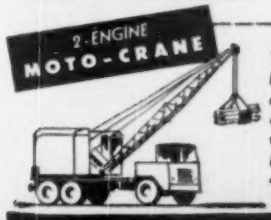

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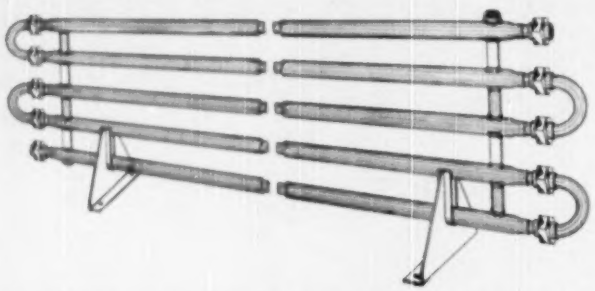

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plus the actual makeup shows that there was a total makeup of 39.0 pounds of magnesia and 93.7 pounds of sulfur per ton.

Using 2100 pounds of total solids per ton at the furnace as a basis with an average heating value of 6060 btu per pound of dry solids as determined over the past year's operation, we find that when firing at an average concentration of 59 per cent solids we generated 7915 pounds of steam per ton at 621 psi and 715°F. total temperature. In addition the hot gas from the boiler evaporated 1110 pounds of water per ton from the liquor in the cascades and heated 75,000 pounds of water per ton from 100 to 140°F. in the cooling towers.

Estimate of Attainable Balance

As the second step in our presentation we will attempt to estimate a balance which is feasible and economically attainable by minor changes to the present system at Longview. To establish this new possible balance we will use as a basis the foregoing tabulation of known losses together with the experience obtained while operating the several pieces of equipment.

1. First, the loss of sulfur at the dump tank vents, which is in the form of SO_2 vapors, can be saved by collection in a suitable header and transferred to the cooling towers and subsequent absorption towers where it will be absorbed in conjunction with the SO_2 from the recovery units to make raw acid. At the present time we are installing a suitable header and line from these units to the cooling towers and in the future these vapors will be recovered.

2. Second, the losses of solids at the knotters, though small, are subject to reduction and should be considered. A suggested way to reduce these losses would be to crush the knots and wash them in a small diffuser and return the effluent to the proper stage of washing. Since this loss is so small, we are not at present planning to recover this loss but suggest that it should be considered in any subsequent proposals.

3. Third, the losses of solids in the pulp leaving the third washer are of such magnitude that they deserve careful consideration. There are two feasible ways to reduce these losses. First, the most obvious way is to use more water for washing on the third stage. However, this method means more dilution of the filtrate and lower concentration of the liquor to the evaporators with more steam required for evaporation. The economics of this method of saving organics and chemicals will depend upon a comparison between the value of recovered solids and the increased cost of evaporation. These losses also could be reduced by installing a fourth stage washer, using the same total quantity of water for washing and, by control, maintaining dilution in the first stage filtrate at its present low figure. At the moment we are considering using the existing brown stock washer at Longview as the fourth stage washer and returning the filtrate for use in third stage washing.

4. Fourth, the losses of solids in the acid condensate from the multiple-effect evaporators are due somewhat to mechanical carry-over in the vapors from the several effects. However, there will always be losses in organics and sulfur which are inherent in the process of evaporating liquor derived from sulfite cooking. At the present we are considering ways and means to reduce the losses from mechanical carryover.

5. Fifth, the majority of the solids, particularly organics and magnesia which are lost with the vapors from the fifth effect of evaporation to the jet condenser are due to mechanical carryover and can and should be saved. Since the survey we have made some changes to the evaporator which have reduced this carryover considerably and subsequent changes will further reduce these mechanical losses.

6. Sixth, the losses at the acid settling tanks are very small and probably inherent in the process since calcium entering the system with the chips will necessarily drop out at this point as a calcium monosulfite together with some magnesium compounds which are also insoluble. Therefore, we are not considering the elimination of these losses in the settling tank at Longview.

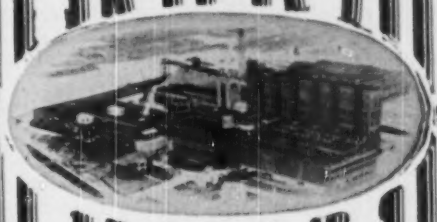
7. Seventh, the sulfur and magnesia loss at the acid filters is largely due to the residual acid left in the sand bed at the time of backwashing and besides this loss there is the inherent loss due to calcium monosulfite. The loss due to the residual acid could be reduced by flushing the bed with fresh water before backwashing and returning the effluent either to the settling tank or back to the absorption tower system. However this plan requires more time for backwashing and may require additional filter beds. We are considering this idea at Longview but are not planning to do anything definite in the immediate future.

8. Eighth, the losses of chemicals and organics to the sewer can be and are being eliminated except for unavoidable and infrequent tank spill-overs owing primarily to lack of adequate storage or capacity at certain stages in the system.

Having indicated the proposed methods for reducing the known losses we will now consider the possibilities of reducing or eliminating some of the unaccounted for losses which are small in the case of

(Continued on Page 107)

SOUNDVIEW



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magnesia but higher and less subject to reduction in the case of sulfur which exists mainly as gaseous SO_2. Some of the more obvious unaccounted for losses are as follows:

(1) Digester relief and filling losses which are small and in the form of sulfur dioxide do not lend themselves to any economic method of reduction in our case.

(2) Sulfur lost in the vapors from the vents of the multiple-effect evaporators can be recovered by extending the vents to the cooling towers and absorption towers. At the present time we are connecting these vents to the vent line between the dump tanks and the cooling towers as outlined above.

(3) Sulfur and magnesia lost as a deposit in the bottom of the absorption towers could be recovered in a large part by constructing the tower with conical bottoms instead of flat bottoms. This construction would insure that the magnesium monosulfite be kept in circulation through the towers thereby reducing its formation and increasing the production of the bisulfite.

(4) Losses of chemicals due to sampling the liquor and acid are difficult to eliminate but could be reduced by installing return lines from the several sampling stations to allied equipment. For instance the concentrated liquor sampling at the pressure effects could be returned continuously to the vacuum effects of the multiple-effect evaporators.

(5) The loss of magnesia at the experimental washer for removing potassium and sodium salts from the ash will be eliminated of course when we install a washer large enough to handle the system rate of flow.

(6) The sulfur lost at the cascade evaporator level control tank will be recovered when the tank is sealed and vented to the gas duct between the boiler outlet and the cascade.

(7) The sulfur lost to the stack is in the form of sulfur trioxide contained in the gases from the recovery unit. This loss can be substantially reduced by maintaining low excess air for combustion in the recovery units but cannot be eliminated entirely.

(8) The sulfur lost as sulfur trioxide in the SO_2 gas coolers in the acid plant cannot be eliminated but in any case the amount is small, probably less than 0.5# per ton.

(9) The sulfur lost with the vapors from the vents of the dilution and weak liquor tanks can be recovered if these vents were connected to the vent system to the cooling towers as outlined above.

(10) Chemical losses of magnesia and sulfur by leakage at pump packing glands and at pipe fittings and valves are impossible to eliminate entirely but can be reduced to a large degree.

On the basis of the foregoing discussion of the proposed methods of reducing the losses of organics, sulfur, and magnesia in the recovery system as it is installed at present in the Weyerhaeuser mill at Longview, we can arrive at a material balance wherein the known losses have been reduced to economic levels. The following tabulation outlines what we believe to be the practical minimum of losses applicable to the present Longview operation in pounds per air dried ton of pulp.

MINIMUM LOSSES PER TON OF PULP (IN LBS.)

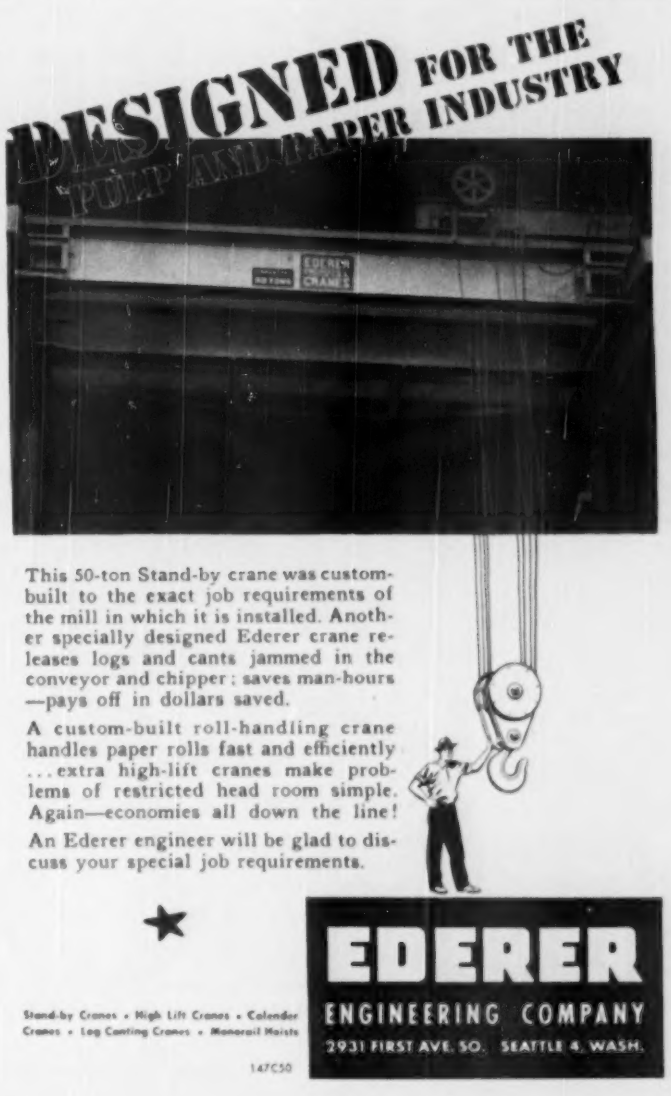
	Organics	*MgO*	*Sulfur*
Vents at dump tanks	0	0	0
Knotters	6.0	0.5	0.7
Pulp leaving 3rd Washer	31.0	7.0	11.2
Evaporators (acid condensate and jet condenser)	26.0	3.0	2.9
Acid settling tank		0.2	0.1
Backwashing acid filters		2.5	6.0
Sewer	0	0	0
Total known losses	63.0	13.2	20.9

Summary

Using the above tabulation of known losses and considering the recovery of the unaccounted for losses as impractical at this time, we find that *under optimum conditions at Longview the makeup of sulfur would become 71 pounds per ton or an overall sulfur recovery efficiency of 70%. The makeup of magnesia would become 18 pounds per ton or a recovery efficiency equivalent to 88%.*

In addition we would find 2350 pounds of total solids per ton of air dried pulp available for firing in the recovery furnace. With this fuel having an average heating value of 6060 btu per pound of dry solids and fired at an average concentration of 59% solids we would generate 9,000 pounds of steam per ton at 621 psi and 715°F. total temperature.

In concluding we wish to emphasize that we have dealt only with the conditions and the recovery equipment as they now exist at the Longview mill and that we have considered the digester SO_2 re-



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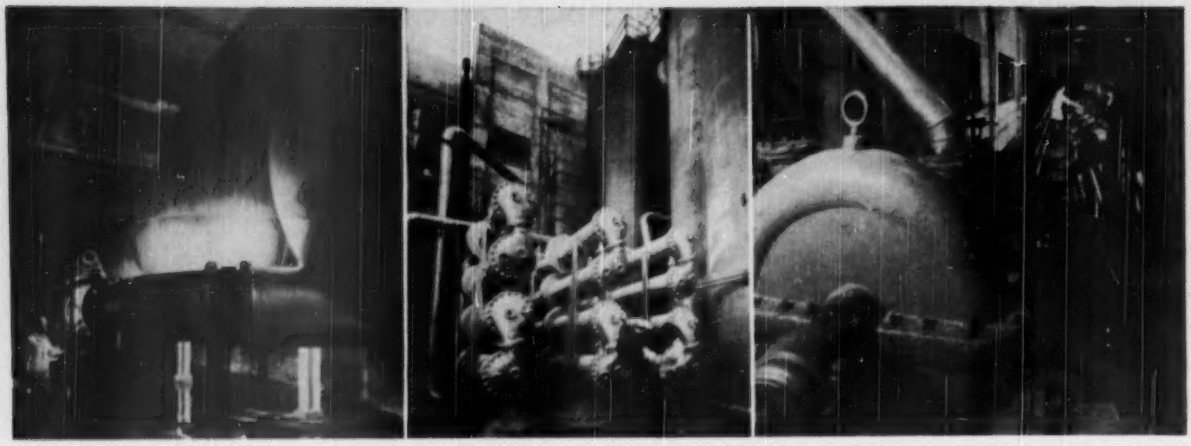

A NUMBER OF CHANGES HAVE BEEN MADE IN EQUIPMENT in the MgO Plant at the Pulp Division, Weyerhaeuser Timber Co., Longview, as described in this article. Here are some of the interesting installations still intact as described in our Nov. 1948 issue when the plant started up (left to right):

STOCK TANKS IN DUMP-AND-WASH BUILDING (left): One of most novel new sights in a pulp mill—like small dirigibles, these huge steel receptacles are 70 ft. long, 17 ft. diam., Stebbins acid-resistant brick lined. Digesters are dumped here instead of being blown.

MgO SPRAY COOLING TOWER (middle) in background, with ESCO heat exchangers in foreground.

G. D. JENSSEN ACID FORTIFICATION PLANT (right): A 3-stage plant from sulfur burner to gas cooler to absorption tower. Gas fan in foreground; filters in background.

covery and the dump tanks as integral parts of the installation.

We believe the findings of our survey would prevail at any future installation of a recovery system if similar in all respects to the Longview installation.

Further, for any other magnesium recovery installation which has been modified to include existing or projected blow pit sulfur recovery systems, we believe the expected recovery of sulfur will depend upon the efficiency of the auxiliary system, as the efficiencies of the magnesium recovery which starts basically at the pulp washers will be essentially as developed at Longview.

Previous published formal literature: Baker, R. E. and Wilcoxson, L. S., TAPPI Vol. 33 No. 4: 187-190 (April 1950), summarized in PULP & PAPER issues of Mar. 1950 and Oct. 1949.

M. R. KANE, retired vice president of Price Brothers & Co., Quebec, in charge of woodland operations, has been made a member of the company's board of directors, succeeding the late Col. C. H. L. Jones.

New Purchasing Agent

After many years as purchasing agent for Spruce Falls Power & Paper Co., Kimberly-Clark Corp. of Canada, LongLac Pulp & Paper Co. and Upper Canada Timber Co., J. Victor Kinsman has retired owing to ill health, and J. D. Hofman is now acting in his place.

GORDON A. FRANKLIN, technical director of the E. B. Eddy Co., has resigned to become associated with the research department of the Ontario Paper Co., Thorold, Ont.

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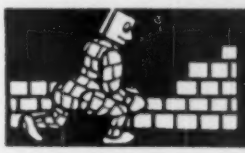

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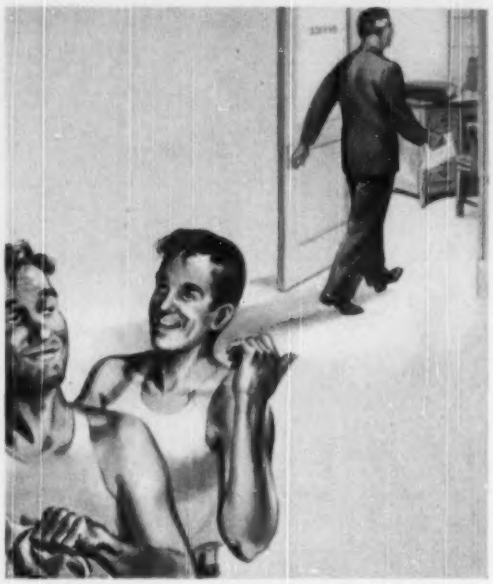

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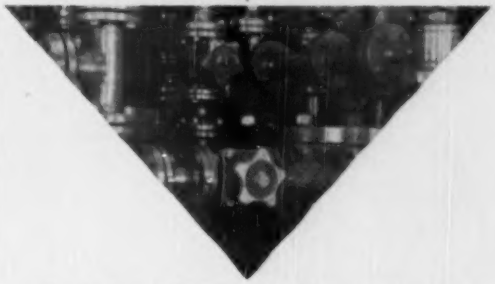

For the dependable protection against corrosion that assures you of long-term operation at a minimum maintenance cost—*specify saran lined steel pipe.* Saran's unusual resistance to most chemicals and solvents plays an important part in the reduction of shutdowns and lost production. Another noteworthy advantage is its ease of field fabrication—involving NO costly delays with special tools or handling. Saran lined steel pipe is available in maximum lengths of 10 feet and in sizes from 1 to 6 inches. Also available are saran lined diaphragm valves, plug valves, flanges, reducing flanges, flanged fittings, gaskets and fittings with union ends. Manufactured by The Dow Chemical Company, Bay City, Michigan, distributed by Saran Lined Pipe Company, Dept. TSP-32.

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Try TRI-CLOVER . . . for the answers to ALL your CORROSION-RESISTANT PIPING PROBLEMS

(Left and Right) Two examples of standard butt-welded fittings furnished in flanged assemblies. By using standard Tri-Clover fittings, we can often solve many "special" problems with a minimum of extra fabrication. Send for Catalog 748 covering the standard "Zephyr-weld" fitting line.

(Right) Special 16" inlet Header for paper mill job fabricated of type 304 Stainless Steel, with 26 3" IPS connections, using Van Stone Flanges.

(Left and Right) 24 inch O.D. Tri-Clover welding fittings of mitre-joint construction—further examples of the special fabrication available to meet individual requirements. While standard Tri-Clover fittings incorporate streamlined "sweep" construction, we are equipped to fabricate practically any other type, in sizes through 36" O.D.

TRI-CLOVER offers you the best *one source* of supply for all your corrosion-resistant piping problems. Our specialized experience in alloy fabrication is your assurance of best results and lower over-all cost in the long run. When it comes to expert welding, fabricating and annealing of complex assemblies, you just can't beat the speed and accuracy offered with TRI-CLOVER'S exclusive Heli-Arc Atomic Hydrogen Welding . . . a specialized semi-automatic process that assures highest quality and FULL corrosion resistance.

TRI-CLOVER fittings are now being used in mills operated by West Virginia Pulp & Paper, Champion, Marathon, Dexter, International, Southland, and others. *Let our corrosion specialists furnish detailed recommendations covering fittings and special prefabricated assemblies to meet your specific requirements. Send us your layout sketches.*

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THE Complete LINE

GEORGE OLMSTED's newest ash tray is pure crystal engraved with his initials, the date of May 8, 1950, and the magic device "SAPI"—all going to prove tradition that presidents of paper manufacturing companies traditionally have high regard for salesmen, and that salesmen have high regard for paper mill presidents. The tray is a gift to Mr. Olmsted by the Salesmen's Association of the Paper Industry. Mr. Olmsted is the new chief of APPA and president of S. D. Warren.

JUSTIN WEDDELL, public relations man for St. Regis Paper Co., at its Pensacola, Fla., mill division, has been elected president of the Cantonment Rotary Club.

MISS SARA MEREDITH, of Jackson, Miss., active in the paper trade for the past 12 years, has joined the Bancroft Paper Co., Inc., as assistant manager of that company's Baton Rouge, La., branch, where she will handle purchasing and merchandising.

JOHN ZINK, vice president of the big Hammermill plant at Erie, Pa., was a featured speaker at the May 15th meeting of the New York City paper salesmen's group in the Roosevelt Hotel. His talk was one of a series by prominent mill men in recent weeks as salesmen sought answers to the eternal double query: will there be paper enough to sell, or too much paper to sell at a fair profit? Mr. Zink said so long as there were salesmen familiar with merchandising and hard work, the future looked promising.

HELP WANTED

MANAGER of operations for several divisions of a large pulp and paper mill engaged in the manufacture of coated and uncoated papers from soda, sulphite, groundwood and kraft pulps. At least 15 years technical and operations experience in paper industry and 5 years as manager or assistant manager of a mill. Eastern U. S. location. Age 38-45. Salary $15,000-25,000. Please give complete details. Reply to Box P&P-77, PULP & PAPER, 71 Columbia Street, Seattle 4, Wash.

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Large Western pulp and paper mill manufacturing kraft, groundwood and sulphite pulp and papers and doing extensive converting seeks graduate engineer with 15 to 20 years mill experience gained principally in the pulp and paper business. Initial responsibility would be field supervision of maintenance, construction and shops embracing crew of approximately 300 employees. Successful man could work into plant engineering position within 3 to 4 years. Reply to Box P&P-76, PULP & PAPER, 71 Columbia St., Seattle 4, Wash.

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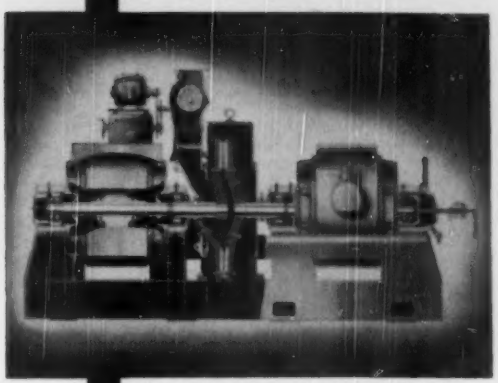

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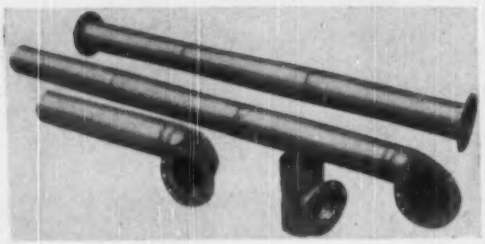

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Mount Hope Expander installation at Nicolet Corp., (location), on 72" width super calender.

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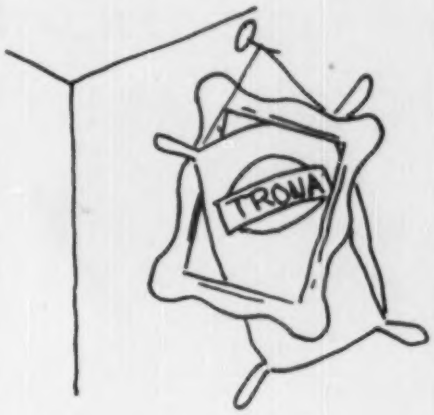

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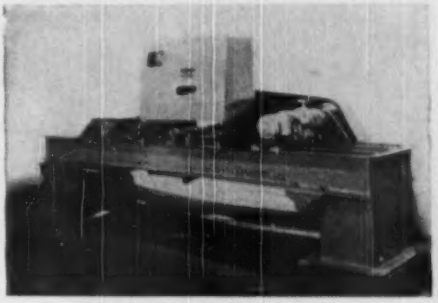

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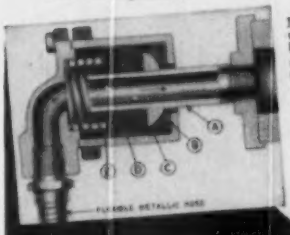

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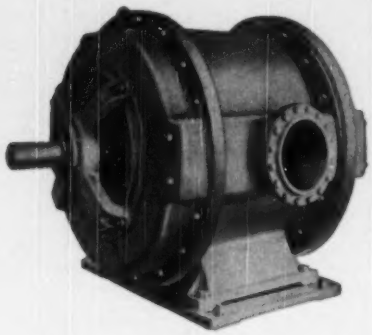

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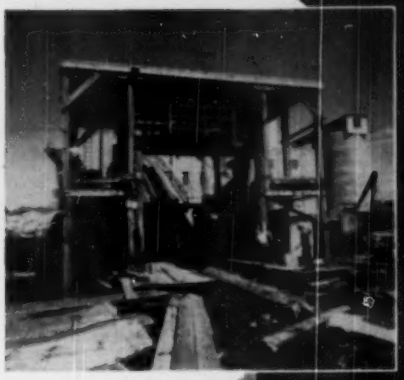

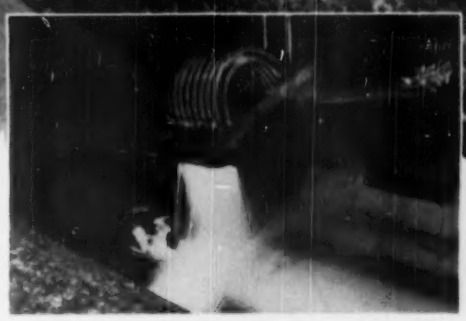

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